

Industrial

# Standardization

and Commercial Standards Monthly



## Standards in the War Effort

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**JUNE 1942**

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# Industrial Standardization

And Commercial Standards Monthly

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RUTH E. MASON, Editor

*Our Front Cover:* Finished gun barrels ready for further assembly. Photo by Johnston & Johnston.  
Courtesy American Type Founders, Inc.

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Reg. in U.S. Pat. Off.

**Standardization is dynamic, not static. It means  
not to stand still, but to move forward together.**

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Office at New York, N. Y., under the Act of March 3, 1879.

## Open Letter to ASA Members

**T**HIS issue of INDUSTRIAL STANDARDIZATION emphasizes the place of standards in the war effort. In articles from the War Production Board, from the Office of Price Administration, from the Army, from prime contractors and sub-contractors, it shows how fundamental are standards in war production.

The present situation offers an enlarged opportunity to industry to do the standardizing job that is needed. It is a challenge to ASA members who have been shouldering the burden for the past 20 years, to go out and get additional companies to join in the work.

The American Standards Association would welcome as members 1,000 companies which need ASA services.

You are a member of the American Standards Association. Are you willing to enlist some of your companion companies in this membership and thus do them an outstanding service?

Now is the time when standards are so important that the job cannot be postponed—or left to someone else.

—*R. E. Zimmerman,*  
*President*



# WPB Drives for Simplified Lines And Standards

by Howard Coonley

*Chief, Simplification Branch,  
WPB Bureau of Industrial Conservation*

**S**IMPLIFICATION based on standardization offers the most efficient, as well as the most intelligent means of cutting down the use of critical materials and at the same time of expanding output of essential production facilities. This is the principle upon which the Simplification Branch of the Bureau of Industrial Conservation is operating.

It is no news to progressive engineers and industrialists that the use of simplified practice procedure reduces the amount of managerial time needed to keep production running smoothly and that a standardized operating routine relieves the pressure on executives, from foreman to president.

Normally this is all important. But under present emergency conditions it is not so important as the other effects of simplification and standardization—release of critical materials, speeding up of production, reducing requirements for storage and shipping space, and liquidating of inventories. Already simplification requirements and standardization of specifications brought about through Limitation Orders, as well as standards adopted in connection with price orders, are showing surprising results.

## Standards Programs Help Simplification

It is interesting that in those industries which have well developed standardization programs simplification orders as well as standards are made effective more quickly, are more easily developed, and are more likely to be satisfactory to all concerned.

The valve and pipe fitting industry, for example, offered a difficult standardization problem because of the great variety of pipe fittings and valves demanded for different industries and services. In 1940 one of the major producers carried in stock more than 50,000 different items of its products. Despite this fact, the pipe and fittings industry was one of the first to come through with a thoroughgoing simplification order. Having started its work on standardization years ago, the industry was geared to carry out this emergency program which, it is believed, is based on such sound and intelligent principles

that it will be continued with few additions in the post-war period.

## Cuts Pipe Fittings from 8,000 to 3,000

Limitation Order L-42 (which, incidentally, was completed before I arrived in Washington) covers in its Schedules various products of the valve and pipe fittings industry. Schedule II, for example, cuts down the number of pipe fittings which are being produced from 8,500 to less than 3,000. It has been estimated that by means of this one simplified practice order an increase of 15 to 25 per cent in production can be accomplished in this branch of our industry. In the lines of brass, bronze, and iron-body valves, covered by Schedule I of L-42, we expect that we shall be able to increase our production and shipment by 25 per cent. It is estimated that this schedule alone will save more than 1,000,000 pounds of copper base alloy; enough to produce about one million 50-mm fuses. Savings in material which are expected from other Schedules of L-42 include 19,000 tons of cast-iron through the simplification of soil pipe and fittings, as well as 18,000 tons of steel and 500 tons of copper through elimination of metal jackets from boilers. Schedule VI, on tubular radiators, issued March 30, saves some 11,500 tons of cast iron annually through eliminating production of large-tube radiators.

As these estimates indicate, the limited schedule of production permitted by Order L-42 is releasing large amounts of critical materials which would otherwise be tied up in slow-moving stocks. These savings of materials, however, do not tell the whole story by any means. Shipping space which has hitherto been assigned to these special items is also released. As stocks are gradually

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**Simplification Branch uses standards methods in stimulating and coordinating industry and Government efforts**

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depleted and not replaced, storage space badly needed for standard items and for materials for the Army and Navy will become available. The big industrial users of pipe and fittings, the oil companies, the railroads, etc., also carry stocks of these special items. They, too, will reap the benefit of the simplification orders, in that their inventories will gradually be liquidated and space and time formerly devoted to special items will instead be used for standard items and for material needed in the war effort.

Simplification and standards play an important part in Limitation Orders issued by the War Production Board. Each one of the following limits production on the basis of a carefully selected list of sizes and styles of product. In some of these simplification orders, the principle of standardization, in which the selection of sizes and styles is based on technical specifications and requirements as to quality and performance, also has an important place. The L-42 Orders covering pipe and fittings, the orders dealing with styles of clothing, the specifications for the amount of crude rubber in manufacture of products are in this category.

- L-26—To conserve scarce materials by restricting production of farm machinery and equipment.
- L-28—To conserve scarce materials by curtailing use in manufacture of non-essential incandescent lamps.
- L-52—Curtailing the manufacture of certain bicycle types and bicycle parts.
- L-42—Schedule No. 1. Manufacturing specifications and bronze valves.
- L-42—Schedule No. 2. Simplification schedule covering various types of iron, brass and pipe fittings.
- L-42—Schedule No. 3. Elimination of metal jackets, fusible plugs and tricocks from low heating boilers after June 1, 1942.
- L-42—Schedule No. 4. Simplification schedule on cast iron soil pipes and fittings.
- L-42—Schedule No. 5. Simplification of plumbing fixture fittings.
- L-85—Simplification of styles of women's and children's clothing.
- L-76—Restricting the manufacture of non-essential radio tubes.
- L-116—Simplification of styles of feminine lingerie and certain other garments.
- M-15-b-1 and amendments—Specifications limiting amount of crude rubber in manufacture of various essential products.
- M-15—To conserve the supply and direct distribution of rubber.

The effect of the simplification orders goes even further. Elimination of the special items means speeding up through mass production on the standard items which have been selected to remain in production, for they are the ones most urgently needed by the Army and Navy as well as by the war industries. Selection of these standard items eliminates the constant change in machine set-up which is necessary when small quantities of special items are called for. It eliminates the special designs and drawings, the special tools, special jigs and fixtures, and special handling formerly needed to keep these items in production. In short, through such a simplification and standardization order, we are able to make the most effective 24-hour use of our production facilities and our manpower.

The benefits of simplification will be found in many unexpected places. One result must inevitably be the adoption by the Government of many single standards in place of the diversity of standards now used by individual Government departments. There is a great opportunity for simplification here, simply through the adoption of one of several now-existing Government standards for each product.

### Army and Navy Cooperate

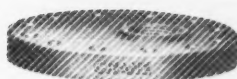
I am happy to say that since I have been in Washington I have found every evidence of willingness to cooperate by the Army and Navy and other Government departments as well as by the branches of WPB and OPA. Already much is being done to bring about such cooperation. Recently, for example, I was invited to a luncheon given by the Health and Medical Service Division of the Office of Price Administration for a group of people in the Government interested in the work of the Simplification Branch. The Army and the Navy, OPA, the National Bureau of Standards, the Food Branch of the WPB, were only a few departments which were represented. The discussion centered on surgical instruments. Almost every one of these branches had a design of its own for surgical instruments, but all expressed great interest in the idea of pooling their requirements and developing a single standard for use by all.

One of my most important jobs as Chief of the Simplification Branch, as I conceive it, is to gain the interest of all such groups and win their cooperation in developing an intelligent unified program of simplification.

This program, it seems to me, extends even beyond Government requirements. For instance, one job that we have not tackled up to the present time is the Lend-Lease program. In its early stages, each one of our present Allies very naturally wanted material according to its own standards, made to its own designs. Progress has been made since that time, but much still remains to be done. For example, one of the countries re-



Reducing Screwed Flange  
No. 155 E, \*Cast Iron



Eccentric Reducing Screwed Flange  
Prices on application

List Prices, Each

| Size<br>Inches | Faced | Faced<br>and<br>Drilled | Size<br>Inches | Faced | Faced<br>and<br>Drilled | Size<br>Inches | Faced | Faced<br>and<br>Drilled |
|----------------|-------|-------------------------|----------------|-------|-------------------------|----------------|-------|-------------------------|
| 1 1/4 x 6 1/2  | 1.80  | 2.15                    | 1 1/2 x 12 1/2 | 5.50  | 6.25                    | 2 1/2 x 20 1/2 | 17.50 | 19.25                   |
| 1 1/2 x 6 1/2  | 2.10  | 2.45                    | 2 x 12 1/2     |       |                         | 3 x 20 1/2     |       |                         |
| 1 1/2 x 7 1/2  | 2.30  | 2.65                    | 2 1/2 x 12 1/2 |       |                         | 3 1/2 x 20 1/2 |       |                         |
| 2 x 7 1/2      |       |                         | 3 x 12 1/2     |       |                         | 4 x 20 1/2     |       |                         |
| 1 1/2 x 8 1/4  | 2.65  | 3.10                    | 4 x 12 1/2     |       |                         | 5 x 20 1/2     |       |                         |
| 2 x 8 1/4      |       |                         | 5 x 12 1/2     |       |                         | 6 x 20 1/2     |       |                         |
| 2 1/2 x 8 1/4  |       |                         | 1 1/2 x 15     | 8.40  | 9.45                    | 8 x 20 1/2     | 25.00 | 27.00                   |
| 1 1/2 x 9      | 3.30  | 3.85                    | 2 x 15         |       |                         | 10 x 20 1/2    |       |                         |
| 2 x 9          |       |                         | 2 1/2 x 15     |       |                         | 6 x 23         |       |                         |
| 2 1/2 x 9      |       |                         | 3 x 15         |       |                         | 8 x 23         |       |                         |
| 3 x 9          |       |                         | 3 1/2 x 15     |       |                         | 10 x 23        |       |                         |
| 1 1/2 x 10     | 3.70  | 4.40                    | 4 x 15         | 12.00 | 13.50                   | 12 x 23        | 37.00 | 39.75                   |
| 2 x 10         |       |                         | 5 x 15         |       |                         | 10 x 25 1/2    |       |                         |
| 2 1/2 x 10     |       |                         | 6 x 15         |       |                         | 12 x 25 1/2    |       |                         |
| 3 x 10         |       |                         | 2 x 17 1/2     |       |                         | 14 x 25 1/2    |       |                         |
| 3 1/2 x 10     |       |                         | 2 1/2 x 17 1/2 |       |                         | 12 x 28        | 43.00 | 46.00                   |
| 1 1/2 x 11     | 4.40  | 5.10                    | 3 x 17 1/2     |       |                         | 14 x 28        |       |                         |
| 2 x 11         |       |                         | 4 x 17 1/2     |       |                         | 16 x 28        |       |                         |
| 2 1/2 x 11     |       |                         | 5 x 17 1/2     |       |                         | 14 x 30 1/2    | 51.00 | 55.00                   |
| 3 x 11         |       |                         | 6 x 17 1/2     |       |                         | 16 x 30 1/2    |       |                         |
| 3 1/2 x 11     |       |                         | 8 x 17 1/2     |       |                         | 18 x 30 1/2    |       |                         |
| 4 x 11         |       |                         |                |       |                         | 18 x 36        | 74.00 | 79.00                   |
|                |       |                         |                |       |                         | 20 x 36        |       |                         |

The Crane Company catalog shows how the WPB Limitation Order affects the production of cast-iron reducing flanges for 250-lb pressure

The sizes shown above in the dark areas have been eliminated. All the flanges on this page conform to the American Standard for Cast-Iron Pipe Flanges and Flanged Fittings for Maximum WSP of 250 lb (B16b-1928)

ceiving Lend-Lease aid originally insisted on having shovels made to its own design and to its own metal specifications. The design is just enough different from our own to raise all the well-known problems which arise from lack of standardization—readjustment of tools, special patterns, and special handling throughout. Given such time as is necessary to make the comparative studies and the opportunity for consultation in the spirit of cooperation which is universally evidenced it will not be difficult to eliminate such differences.

As a matter of fact the entire success of the Simplification Branch is dependent on cooperation. We believe that it is inadvisable to set up a staff in our Branch to do the actual pencil work of developing simplified practices in the tremendous field we cover. The Industry Branches and the Commodity Branches of the WPB, the Consumers Division and Civilian Supply Division of the OPA, and the Materials Division of WPB have organizations that are capable of doing the actual work on simplified practice procedures. Our job, therefore, is one of bringing together information about the simplification work that is going on in the various branches and divisions and of preventing overlapping.

When work on a simplified practice which has already been started by some division needs speeding up we are glad to offer our services to help keep it going. For this purpose, we are building up a staff of specialists who will be prepared to expedite the work in their special fields. In some cases, we may find that a simplified practice is needed but work has not been started. In that case we plan to make a spot-check study to determine whether the proposed simplified practice is important or not. If we find that it is, we will arrange for the initiation of the project in the appropriate Branch or Division.

With this program in mind, I spent the first few weeks as Chief of the Simplification Branch in making contacts and in setting up a standard procedure for the guidance of all concerned with the problems of simplification. The procedure has developed to the point where we now have a well-coordinated program not only with the Branches and Divisions of WPB, OPA, and the Government agencies but with the other three Branches of the Bureau of Industrial Conservation—on Specifications, Conservation, and Substitution and Salvage.

It is our plan that the Simplification Branch shall have eight Sections, each Section to operate under an "Industrial Specialist," with such assistance as he needs. To each one of these Sections we are assigning work of a similar nature, and as far as possible in line with the organization of the WPB industry and commodity branches. Rather than name the sections and tie them down too closely to the scope indicated by a title, we are numbering them and assigning to each specific responsibilities. These sections will work with the WPB industry branches and through them with the industry advisory committees. There are now 24 industry branches,

Eight sections are being planned for the Simplification Branch of the Bureau of Industrial Conservation to cover the following:

**Section I—**

Iron and Steel  
Tools

**Section II—**

Air Conditioning and Commercial Refrigeration  
Consumers Durable Goods (Electrical Appliances Only)  
Communications

**Section III—**

Automotive.  
Special Industrial Machinery  
Construction Machinery  
Farm Machinery and Equipment  
General Industrial Equipment  
Safety and Technical Equipment  
Aircraft  
Transportation

**Section IV—**

Building Materials  
Lumber and Lumber Products  
Plumbing and Heating  
Construction  
Shipbuilding

**Section V—**

Toiletries and Cosmetics  
Furniture and Bedding  
Beverages and Tobacco  
Textiles, Clothing and Leather Goods  
Food Supply  
Health Supplies  
Consumers' Durable Goods (Electrical Appliances Excluded)  
Service and Distribution—Office and Service Machinery  
Ordnance

**Section VI—**

Containers

**Section VII—**

Pulp and Paper  
Printing and Publishing  
Rubber and Rubber Products  
Raw Materials (Iron and Steel Excluded)

**Section VIII—**

Miscellaneous

made up of men brought to WPB from industry, whose main problem is that of allocating materials. In this allocation problem, as well as in the conservation of materials, simplification and standardization can play an active part. It is from our contacts with these Industry Branches, as well as from the studies of requirements made by ourselves and by the other branches of the Bureau of Industrial Conservation, that many of our projects originate. Others, of course, develop from the needs of the Army and Navy, the Maritime Commission, and other Government departments.

To be more specific, we operate as follows:

Simplification projects are normally initiated by the Industry or Commodity Branch Chief involved. In some cases, however, the Simplification Branch takes the initiative. Such projects result from letters from individuals or corporations, personal visits by individuals or corporation executives, or suggestions made by industrial associations in reply to written requests.

The Simplification Branch spot-checks the proposal to determine whether the project will yield important savings of raw materials. It then classifies the project in one of three groups: (1) Materials that are entirely allocated for war purposes; (2) Basic materials that are essential to the war industries, but whose supply is not as critically limited as material in Group 1; (3) Materials available in significant quantities for other than strictly war purposes. The Conservation Section of the Bureau of Industrial Conservation is the source for determining whether or not materials are essential. In addition, the Simplification Branch determines whether the project will increase or relieve important productive capacity.

### Check with ASA and NBS

Before the spot-check is made, the Branch determines whether the American Standards Association or the National Bureau of Standards has undertaken a similar project.

If they have, the Simplification Branch either leaves the project with the ASA or the National Bureau of Standards to complete in the regular course of events, or requests that the project be hurried along, or may take over the project itself. If no project has been started either by the ASA or the National Bureau of Standards, the Simplification Branch may either request that such a project be undertaken or may initiate the project itself.

As a result of its findings, the Branch schedules the project in one of the following classes: A1, Emergency Attention; A2, Prompt Attention; A3, Follow but do not push; or A4, Allow to take



its course. In each case a check is made with the Specifications Branch to determine whether that Branch has an interest in the project.

When a simplification project is being undertaken by an Industry or Commodity Branch, or by the Materials or Consumer Division, it is the responsibility of the Deputy Chief or Senior Industrial Specialist in charge to determine whether the Army, Navy, Maritime Commission, Signal Corps, or Quartermaster's Corps will be concerned or affected. If they are concerned, written notice that the project has been undertaken is sent to the Army and Navy Munitions Board or to the Army direct, the Navy direct, or any other department concerned. A procedure has been established to handle any questions or objections on the part of the department concerned.

Intelligent simplification must be based on standardization and where an industry has made substantial progress in standardization, simplification can be carried out much more quickly and more intelligently. For this reason, the great development of standards through the American Standards Association and through its Member-

Bodies, the American Society for Testing Materials, the American Society of Mechanical Engineers, the National Electrical Manufacturers Associations, and many others, and also through the Standards Division and Simplified Practices Division of the National Bureau of Standards, are being of tremendous help to us.

The Emergency Procedure of the American Standards Association, particularly, is proving itself to be an effective method for developing simplification projects, especially in connection with those based on standardization. Packaging electronic tubes and parts, for example, is a recent simplification project which is progressing rapidly under the ASA Emergency Procedure.

With the help of industry groups, which are our greatest source of information, and with the cooperation of all branches of the WPB and of the Government, the Simplification Branch hopes to develop a program which will be of vital service to both industry and Government not only during the War Emergency but in the years of post-war peace to which we all look forward eagerly.

## Government Emergency Specifications Save Scarce Materials

by C. L. Warwick

*Chief, Specifications Branch, Bureau of  
Industrial Conservation, War Production Board*

THE work now in progress on specifications represents but one approach in the efforts of the War Production Board to meet the changing requirements of military and essential civilian needs. But, since specifications form the framework around which the whole system of governmental and industrial purchasing is built, good strategy has dictated that they be made one of the principal points of attack on the broad problem of conservation of vital materials. This was recognized in the formation in May, 1941, of a Government Conservation Branch in the OPM Division of Purchases, then under Mr. Nelson, one of the principal functions of which was to provide the means for collaboration of OPM with the Federal government in revision of specifications. When the Bureau of Industrial Conservation was organized last fall this work was continued and further developed as the Specifications Branch of the new bureau.

While the work of the Specifications Branch is ramified, its major function is to aid in the

conservation of critical materials through revision of government and industrial specifications covering critical materials and products containing critical materials. This applies especially to the specifications of the Federal government and of the War and Navy Departments, the Maritime Commission, and other war agencies. To this end the Branch acts in a consultative and advisory capacity to these government agencies, and the members of its staff confer with officials of the several government departments concerning revisions of their specifications to conserve

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**Mandatory status for emergency  
alternate specifications is being  
considered by WPB**

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materials and to facilitate production. It cooperates closely with such agencies as the Procurement Division of the Treasury Department and the Federal specification committees in the development of revisions of Federal specifications, and it makes proposals for substitutions of less critical materials and for the embodiment of such proposals in new or revised specifications.

The activities of the Specifications Branch are divided among six sections: Metals; chemical; architectural; electrical and mechanical; civil engineering; and national emergency steel specifications. The latter work is carried on in collaboration with the Iron and Steel Branch of the Materials Division.

### Federal Emergency Specifications

One of the principal activities of the Specifications Branch is collaboration with the Federal Specifications Executive Committee in the development of emergency alternate Federal specifications that are issued to conserve critical materials. The alternate specification is not a revision of an existing Federal specification since the Federal specification itself remains unchanged. It is, as its name implies, an alternate specification, and its use is at the discretion of government agencies.

This work was begun in April, 1941, and has progressed at an increasing pace ever since. About 275 emergency alternate specifications have been promulgated to date. Lists of these specifications appear monthly in *INDUSTRIAL STANDARDIZATION AND COMMERCIAL STANDARDS MONTHLY*.<sup>1</sup>

The emergency alternate specifications, which carry an "E" prefix, are made a part of orders, requisitions, and contracts by reference in the same way that any other specification would be. They may or may not apply to existing contracts, depending upon the circumstances.

Through the activities of the Army and Navy Munitions Board and the War Production Board there is a continual flow of information on the supply of war materials and on military and civilian requirements. These data are revised periodically and are available to the Specifications Branch and the consultants in it, and in general to WPB and the military services. From these data the need for conservation of the various critical materials is determined and the appropriate Federal committees are advised. It is then the responsibility of the government with the collaboration of WPB to see that specifications are suitably revised either by the substitution of alternate materials or modifications in composition that will use less of the critical material.

In this work the Specifications Branch is faced constantly with changing conditions, frequently almost overnight, so that there is need for constant review of specifications for products

that contain some of the more critical materials, such as rubber, tin, nickel, chromium, antimony, manila fibre, bristles, shellac, jute, burlap, etc. Rubber provides a good illustration of these changing conditions. When the rubber situation became critical, the Specifications Branch and the Rubber Branch in the Division of Industry Operations jointly reviewed all the Federal Specifications for rubber and rubber products, including tires, and proposed revisions that permitted substitution of a suitable percentage of reclaimed rubber or other substitute for crude rubber and still gave a usable article. As reclaimed rubber became scarce still further revisions have been proposed and incorporated in the Federal specifications. Looking into the future, further examination of the specifications will be necessary when synthetic rubber becomes available in larger quantities.

Another example is the Federal specification for tableware. Last summer when it became clear that, due to the greatly increased requirements for nickel in military uses, this material would have to be conserved in other directions, the specifications for tableware were revised by reducing the percentage of nickel in the standard nickel-silver composition and by substituting the chromium-type stainless steel for the usual nickel-chromium stainless composition. Later it became evident that chromium, likewise, should not be used as an alloy in articles of this kind, and experiments for plating of steel tableware with either chromium, nickel, silver, or tin led to the development of a new Federal specification covering such products. While the amounts of chromium, nickel, and tin used in these processes are relatively small, the situation has become so critical since our entry in the war that it was decided to limit plating to silver directly on steel. A revision of the Federal specification to permit only this type of tableware is now in process.

### May Be Mandatory

After the emergency alternate specifications are promulgated by the Director of Procurement, the War Production Board also calls them to the attention of its own divisions and to other government agencies, urging their adoption in the interest of conservation. To an increasing extent in recent months the WPB, in collaboration with the Army and Navy Munitions Board and the procurement agencies of the Army and Navy, has exercised control in the use of these specifications through examination of requisitions and contract awards covering products where it is evident that the emergency specifications could and should be used. However, with the critical position of so many materials this has not proved sufficient and steps are now being taken to make such of the alternate specifications mandatory as can properly be done. Authority to recommend to

<sup>1</sup> See page 180 of this issue.

### Parts for an anti-aircraft gun carriage being inspected

Army and Navy cooperate closely with the WPB Specifications Branch in developing emergency specifications to conserve critical materials



*Courtesy Office of Emergency Management*

WPB mandatory status for such specifications as it deems advisable is contained in the Administrative Order establishing the Specifications Branch.

Three degrees of mandatory status are contemplated: (1) Mandatory on all industries and governmental agencies, including military agencies for all purposes; (2) mandatory on all industries and governmental agencies, including military agencies except for combat use; and (3) mandatory for all industries and governmental agencies, excluding the military agencies.

The Specifications Branch is now engaged in reviewing all the emergency alternate specifications to determine the extent to which they may be recommended for mandatory status. Such reviews have been completed for about 100 specifications covering brushes, paper, soaps and detergents, many paint materials, certain electrical materials, and some metal products. A suitable WPB directive is in preparation.

### Army and Navy Specifications

The Army and Navy use a large number of the Federal Specifications, in the preparation of which they take an active part, and have adopted many of the emergency alternate specifications. In addition, both services have specifications of their own which usually cover materials and products of special military nature. In these cases the Specifications Branch works directly with the appropriate supply arms and services of the Army and with the bureaus of the Navy. Such collaboration has been facilitated by the creation of conservation boards in the two services with whom the need for conservation of various materials can be discussed. Since for military items the services themselves must decide whether an emergency specification will provide a product satisfactory for the purpose, WPB has the responsibility of determining with the Army and

Navy which of the emergency alternate specifications can be made mandatory on the services. This is being done officially through the Army and Navy Munitions Board.

### Army and Navy Cooperate

The Army and Navy have revised many of their specifications to conserve critical materials, including some that cover important military items. The procedures of the services in revision of specifications are now quite rapid and flexible; once a modification is agreed upon, revised specifications are immediately issued to govern future contracts and sometimes (where necessary) made applicable to existing contracts. A good illustration is the revision of the specifications for military tires, where proposals by WPB were made to the services through the Standards Division of the Army and Navy Munitions Board, and after consideration were quickly approved with some further revisions and immediately promulgated and made effective for all procurement.

The soldier's mess kit has presented a difficult problem of substitution of some less critical materials for the usual aluminum. Extensive studies and experimentation in which the Specifications Branch has cooperated with the Quartermasters Corps are expected to result in revisions of the existing Army specifications.

Conservation of aluminum in naval construction has also been the subject of close study by the Navy and various groups within WPB. Consultants in the Bureau of Industrial Conservation have reviewed many applications of aluminum, and much has been accomplished in substitution of less critical materials. This work has led to the revision of various Navy, Army, and Federal specifications for aluminum alloys, permitting greater use of secondary metal in many parts, thus conserving primary aluminum for uses where no substitution is possible.

### Collaboration with Other Federal Agencies

The Bureau of Industrial Conservation, of which the Specifications Branch is a part, has a representative in each of the 15 commodity branches of the Materials Division and in each of the 24 industry branches of the Division of Industry Operations. In this way the Bureau has access to the information in these branches on the status of each of the critical materials and on the problems facing the various industries. Furthermore, because of its collaboration with the commodity branches and knowledge gained from its own contacts with industry, the Bureau is able to advise the industry branches on conservation measures they should take, and in particular to aid in the preparation and review of the limitation and materials orders that are the means of effectuating conservation measures. The extent of this phase of the Bureau's work will be evident from an examination of the titles of the branches cited. In addition, many contacts are maintained with the branches functioning in the Division of Civilian Supply and the Consumer Division of the Office of Price Administration.

The Specifications Branch maintains close contact with the Purchase Division of WPB and the Procurement Division of the Treasury Department. The latter agency buys a great deal of material for the government on its own specifications, which at present number about 300 apart from Federal specifications. These specifications are being reviewed by the Specifications Branch and checked against limitation and material orders that have been issued. The suspension of a considerable number of these specifications except for absolute military needs has been recommended. The Procurement Division has cooperated effectively in this work.

### Collaboration with Technical Organizations

The Specifications Branch also works closely with national standardizing bodies and technical organizations. A recent instance is in connection with the conservation of steel by increasing the allowable design stresses in structural steel for buildings. The American Standards Association was asked to submit recommendations to WPB as to the extent to which such increases might safely be made. Such recommendations were submitted by ASA from its committee on Building Code Requirements for Iron and Steel which proposed a substantial increase in allowable stresses using the current design and construction specifications of the American Institute of Steel Construction as a basis. WPB then arranged for a review of these recommendations by a representative group of engineers and designers in the government service, who made further suggestions which have since been approved by the American Institute of Steel Construction and incorporated in National Emergency Specifications for the Design, Fabrication, and Erection of Structural Steel

for Buildings. These have been officially transmitted to the War Production Board which now has in preparation a directive to the government agencies (which now control practically all building construction) requiring that all steel buildings be designed in accordance with the emergency specifications.

Another illustration: A survey of the cement situation by WPB pointed to the desirability of increasing the effective capacity of the cement industry by limiting production to fewer types of cement and modifying certain testing procedures and practices. Accordingly, the Building Materials Branch of WPB asked the American Society for Testing Materials to submit suitable recommendations to meet the situation. This was promptly done, and there are now under consideration emergency revisions of Federal and ASTM specifications for cement which it is expected will form the basis of a limitation order to be issued by WPB.

Other organizations with which cooperative relations have been established include Society of Automotive Engineers, Association of American Railroads, American Iron and Steel Institute, American Society of Mechanical Engineers, Underwriters Laboratories, and many trade associations.

### National Emergency Steel Specifications

The program on National Emergency Steel Specifications is another example of collaboration with technical organizations, but it is more striking perhaps in that it cuts across the whole field of steel producers, users, government agencies, branches of WPB, technical organizations, and standardizing bodies. The program was initiated by the Iron and Steel Branch last fall; it is jointly sponsored by the American Iron and Steel Institute, American Society for Testing Materials, and Society of Automotive Engineers, with the collaboration of the War and Navy Departments and under the supervision of WPB. An administrative committee plans and directs the work under the chairmanship of the chief of the Specifications Branch.

The objective of the program is to increase the production of the steel industry and of the manufacturing industries using steels, within existing facilities, by (1) establishing a list of National Emergency Steel Specifications covering a limited number of carbon and alloy steels, which will fulfill the war production needs both direct and indirect and conserve to the fullest extent the supplies of alloying elements, and (2) establishing a list covering a limited number of standard sizes, shapes, and dimensions of steel mill products. The entire field of steel mill products is included except that certain steels for special military purposes, as designated by the War and Navy Departments, are not considered.

Technical advisory committees upon which all



interests are represented are now at work on the following items. Carbon steel plates; alloy steel plates; aeronautical steels; structural steel shapes; rails and track accessories; wrought steel wheels and tires; carbon and alloy steel bars; concrete reinforcement steel railway axles and forgings; pipe and tubular products, and heavy steel forgings. Other fields to be covered include tool steels, sheet and strip, wire products, and steel casting. In all of this work the WPB has had the closest cooperation of the steel industry, the manufacturing industries using steel, and the Army, Navy, Maritime Commission, and other government users of steel.

#### Reports Ready on Steel Products

Final reports to the War Production Board are ready on lists of emergency specifications for structural steel plates and shapes, rails and track accessories, wrought steel wheels and tires, concrete reinforcement steel, and railway axles and forgings. These specifications are expected to become mandatory on government and industry through the issuance of a WPB limitation order now in preparation.

An additional phase of this work involves the development of emergency alternate alloy steels which contain lower percentages of critical elements, especially nickel, chromium, and vanadium. This work has been carried on at the request of the Iron and Steel Branch by the steel industry in collaboration with the Society of

Automotive Engineers.<sup>1</sup> These so-called "NE" steels are being studied today by the Army and Navy, the aircraft industry, and the automotive and tractor industries to determine how they can best be substituted for the higher alloy steels that have formerly been used. It is planned that these steels will be included in the list of national emergency steel specifications.

#### Restrictions on Construction Materials

Another important phase of the work of the Specifications Branch involves the conservation of critical materials in defense housing and related construction, such as recreation buildings, schools, hospitals, waterworks, and sewage disposal plants; also in defense plants and military buildings. This work involves the preparation of lists of materials and types of construction that will be permitted and from which priorities will be extended in the procurement of materials. The first of these lists was the defense housing critical list. Another list governing the construction of highways, bridges, and culverts has been issued and is being used and administered by the Public Roads Administration in collaboration with the War Production Board. The Army and Navy Munitions Board has recently issued a list of materials permitted for construction under its control. The Specifications Branch collaborated in the preparation of that list and is now developing a similar list to control other types of construction.

## National Truck Standards Eliminate Serious Traffic Barriers

**S**TANDARD regulations for size and weight of trucks, and reciprocal license arrangements, are now effective throughout all 48 states replacing the conflicting regulations which have served as traffic barriers in interstate motor transport. Secretary of Commerce Jesse Jones announced June 2. The governors of all 48 states have now agreed to waive their conflicting regulations for the duration, effective immediately.

Before the agreement was reached, truck shipments of war cargoes were frequently delayed at state lines because of varying specifications as to weight of cargoes and length or width of the trucks. The delays often caused the motor carriers to miss connections with ships loading for overseas transit.

The minimum standards agreed upon are: Width, 96 inches; height, 12½ feet; length of a single vehicle, 35 feet; length of a combination vehicle, 45 feet; weight per inch width of tire, 600 pounds; weight on single axle, 13,000 pounds; weight on two axles, 30,000 pounds; weight on three axles, 40,000 pounds; weight of

semi-trailers, 40,000 pounds; other combinations 40,000 pounds.

The great diversity in the state trucking regulations have formed trade barriers which have been the subject of long controversy. Such barriers have often been referred to as "steps in the balkanization of the USA."

The first truly national traffic standard, the universally used American Standard Color Code for Traffic Signals, was set up by the American Standards Association in 1927. It eliminated serious confusion existing until that time. There are several other American traffic standards.

The work of the Association has led to the elimination of many trade barriers in other fields, as has been shown in testimony which it was invited to present in hearings of the Temporary National Economic Committee.

<sup>1</sup>A comprehensive report on this work is available in the American Iron and Steel Institute's publication, "Contribution to Metallurgy of Steel No. 5: Possible Alternates for Nickel, Chromium, and Chromium-Nickel Construction Alloy Steels," January, 1942.

# Price Control Requires Standards

**R**ISING prices have pushed up the cost of living on the home front, pushed up the cost of materials and of the equipment we need to fight the war. Rising prices have been threatening to deprive us of daily necessities, threatening to interfere with war production.

Since February 1941, the Office of Price Administration has put ceilings on the prices of basic raw materials and on more than 50 per cent of the wholesale price structure, but since Pearl Harbor prices have been threatening to get out of control and move up all along the line, retail, wholesale, and manufacturing.

To achieve over-all price control and to prevent further increases in the cost of living, the Office of Price Administration has issued the general maximum price regulation. This regulation places an absolute ceiling over substantially all of the commodities and services sold at retail. The ceiling also extends over the prices charged by wholesalers, manufacturers, and producers. Maximum prices prescribed are the highest prices charged by each individual seller for each commodity or service during the month of March 1942.

## Must Prevent Price Rises

This maximum price regulation is one of the most ambitious economic regulatory measures ever undertaken by any government. It has one chief function: the prevention of upward spiraling of prices, as part of the seven-point program to combat inflation outlined by the President of the United States in his speech to Congress on April 27. This function it is the duty of the Office of Price Administration to carry out, by the simply stated, but far from simply implemented, expedient of not permitting under any circumstances the prices of all but a very few commodities or services to exceed their highest prices in March, 1942. That is, the ceiling will not be punctured. It is inevitable, if the ceiling is kept inflexible, that "squeeze of margins" will result in many instances. It will be a natural tendency at all levels of distribution to attempt various short-cuts in order to increase margins. On the choice of these short-cuts, some of which will admittedly be necessary, may depend the essential quality of the merchandise which the consumer will be able to buy and also, in large measure, the very success of the regulation in

by Leon Henderson

*Administrator, Office of Price Administration*

fulfilling its purpose of preventing real price rises.

OPA is fully cognizant of the fact that a price ceiling alone will not necessarily have the effect of preventing "real" price spiraling in all cases. If, for example, a ceiling price were set on a commodity and no attempt were made to define that commodity, variations and substitutions could be instituted which would decrease ultimate serviceability through quality deterioration. This is, in essence, just as much of a price rise to a consumer as an actual dollars and cents rise in price. To the ultimate consumer real cost is represented not merely by the purchase price but is made up of at least two factors, which might be expressed as the ratio between monetary cost and the length of useful service.

It is the function of standards to keep this ratio as low as possible. Price control under the maximum price regulation will not be fully effective without quality control. The maximum price regulation recognizes this fact in the phraseology of its Section 2 which states, in part, that the maximum price for any commodity or service shall be the highest price charged during March for: (1) The *same* commodity or service; or (2) for the *similar* commodity or service most nearly like it. It states further that one commodity shall be deemed "similar" to another commodity if the first has the same use as the second, if it affords the purchaser fairly equivalent serviceability. . . .

## What Is "Same Use?"

"Same use" and "fairly equivalent serviceability" are technical, not economic considerations. Their interpretation is logically within the province of the technically trained fraternity. Who is better qualified than the technologist to determine whether there is any difference in serviceability, for example, between the towel which sold for 59 cents in March, 1942, and the same size towel in presumably the same quality which will be sold in June, 1942? Surely the consumer "coming to market" is not ordinarily qualified. In most cases all she knows is that the price and size may be same, but is the towel the same? Is the fabric as strong, as absorbent,



as fast in color as the one she may have bought in March? After she buys the towel and finds that it wears out too soon, it is too late to make a complaint. In Canada it has been reported that in order to maintain the price ceiling, variety and quality in goods and services are being ruthlessly sacrificed. In addition, many of the substitutions are hidden and have not been made public. Thus price control (establishing a maximum price) alone has failed to protect the consumer interest. In this country, however, the consumer has one distinct advantage over the Canadian housewife. Every merchant will have to mark his merchandise with its ceiling price so that she will at least know that the price is not higher than in March, but she still does not know whether the quality of the item is the same. That is where standards come into the picture of price regulation.

Let me make it clear that the Office of Price Administration does not anticipate drawing up a series of regimentations for every one of us to follow. Its interest in standards is solely as they afford a means toward maintenance of a stable price-quality relationship as of the March, 1942 level.

#### Existing Standards Data Helps

In the development of these standards of quality, performance, or service, we plan to utilize to the fullest extent the facilities, publications, and data of recognized standardization bodies throughout the country. Wide utilization is already being made of the assistance of the standardizing agencies within the Government as well as of commercial, independent, and university laboratories. The published standards of such bodies as the American Standards Association, American Society for Testing Materials, American Iron and Steel Institute, Society of Automotive Engineers, and many others, and Government bureaus such as the National Bureau of Standards, Bureau of Mines, Bureau of Home Economics of the Department of Agriculture,

Customs Bureau of the Treasury, Food and Drug Administration, and others carrying on activities complementary to the standards work being done, will be called upon to assist and participate as the development gets under way in a concentrated effort.

In view of the varying nature of consumer and industrial commodities, it will be seen that the type of standard necessary to effective price control will include standards of construction, standards of performance, and standards of service, depending upon the nature of the commodity with which we are dealing. In many instances, the standard will consist of a combination of all three of these factors to the extent necessary to deal effectively with the quality problem. As war shortages become more acute, it will be necessary to develop standards of construction and performance for utility<sup>1</sup> or war models in order that essential civilian requirements can be met, and at the same time solve the many complicated problems in maintaining a reasonable level in the cost of living of the people.

Effective and proper methods of enforcement are being developed so that price control will be maintained from the retailer through to the manufacturer or producer and in such a way that the flow of goods and materials will not be seriously hampered. Inspection and investigation will be maintained at each of the levels necessary to properly isolate and solve tendencies toward price rises and quality deteriorations. The inspection and testing will be organized to the extent necessary to bring about compliance with standards. The heavy demands which will be placed upon the testing facilities of the country will necessitate utilization not only of Governmental, but also of commercial and independent laboratories. The specialized facilities for testing existing in many of our universities will also be brought to bear upon the problem.

<sup>1</sup> See article describing "utility" model gas range, page 174.

#### From OPA Price Schedule No. 89, "Bed Linens"

Standards peg quality to price, prevent hidden price increases through lowering of quality

Key to Types of Bed Linens Listed in Table II 1/

| Specifications 2/                        | Type 180 2/ | Type 140 | Type 128 | Type 112 |
|--|-------------|----------|----------|----------|
| Threadcount per square inch (unbleached) | 180         | 140      | 128      | 112      |
| Weight per square yard (ounces)          | 3.6         | 4.6      | 4.0      | 3.7      |
| Tensile strength (pounds)                |             |          |          |          |
| Warp                                     | 60          | 70       | 55       | 45       |
| Filling                                  | 60          | 70       | 55       | 45       |
| Selvage                                  | Tape        | Tape     | Tape     | Tape     |
| Plain hems (total for both ends) 4/5/    | 4"          | 4"       | 4"       | 4"       |
| Stitches per inch 4/5/                   | 14          | 14       | 14       | 14       |
| Added sizing (maximum) 4/                | 1X          | 4%       | 6%       | 10%      |

1/ This table states minimum specifications (except for added sizing) for each type.

2/ In any instance in which the buyer or seller is in doubt as to whether bed linens meet the stated specifications, such bed linens shall be tested by Federal test method GOC-T-191A. The unit for such testing shall be the case,

The standards work of OPA may be summarized as follows:

1. The development of quality definitions (based either on construction or performance) of commodities in order to peg price to quality.
2. The development of informative labeling as a means of controlling quality to enable the consumer to make her own comparisons of price-quality relationship, and to act as a material aid in the enforcement of the regulation.
3. The development of basic standards for "utility" or "victory" models as shortages in particular fields necessitate such a step.
4. Analysis of consumer complaints of violation of the ceiling whenever the alleged violation involves the question of quality deterioration.
5. Consultation on the technical problems which will arise as it becomes necessary to ration commodities.
6. Presentation of information to the consuming public explaining the importance of the various technical aspects of price control.
7. Educating the consumer to buy wisely and according to need and, above all, to care for and conserve whatever she has.

The standards work of the Office of Price Administration is carried on in close collaboration with other Defense Agencies which are concerned with problems of civilian merchandise, quality, and conservation of scarce materials. A two-way flow of information is maintained between OPA and various offices of the War Production Board such as the Bureau of Industrial Conservation

and the Division of Civilian Supply. This well-coordinated relationship results in the most efficient application of standards to the war effort.

It is evident that at the outset the standards developed will apply essentially to existing goods. As war-induced shortages and price problems increase, adjustments in standards will lead to the development of more concentrated standard lines, and finally in all possibility to models which utilize the least critical materials, the least productive capacity, and the least distribution effort. The many factors entering into the development of such commodities will determine where best they can be manufactured, and the degree to which durability enters the problem. The needs of the armed forces and lend-lease will directly bear upon whether production can be made more effective in each of several plants or should be concentrated in one. Industry, companies, associations, and technical societies can and must assist in all of these standards developments to the fullest possible extent.

The American Standards Association can effectively bring to bear on the problem the mass of data collected since its inception, concerning the development of American Standards for materials and commodities. It can assist greatly by utilizing the specialized competence of the members of its standing committees to develop standards recommendations on specific commodities which can be utilized in the price control standardization activity. The need for speed is urgent, and the emergency procedure of the Association should serve as the medium for bringing about prompt assistance.

### Association Is Formed to Promote U. S. Grade Labeling of Canned Goods

An association to promote consumer understanding and knowledge of U. S. Continuous Inspection and U. S. Grade Labeling of canned fruits and vegetables now being carried on by the Agricultural Marketing Service, was organized last month. The association, the U. S. Inspected Foods Educational Service, has headquarters in New York and will work under the guidance of a Regional Committee of four representative canners. Director of the Service will be Miss Polly Gade, Home Economist.

Eligible to membership in the new association are those canners of fruits and vegetables who have been approved by the Agricultural Marketing Administration to receive the U. S. Continuous Inspection Service. Forty-five plants are now operating under this service, which requires that product must comply with AMS standards, and that the equipment and operation of the plant must meet rigid efficiency and sanitation requirements. In these plants the quality of the product

is checked by an AMS inspector stationed at the plant. This continuous inspection service gives the canner the right to label his product U. S. Grade A, B, or C whichever the case may be.

The Educational Service plans to prepare materials about the continuous inspection program for consumer study groups, women's clubs, and home economics demonstrations, as well as to interpret consumer needs to its sponsoring group.

### To Correct a Correction

Again we attempt a correction! Last month, page 110, we called attention to a typographical error resulting in the use of an incorrect symbol in the article by J. C. Stevens on the standard Letter Symbols for Hydraulics. Now we find that the correction itself contained an error, in which the Greek letter  $\delta$  was used in place of the italic letter  $g$ . The statement should read: "Density,  $\rho$ , represents mass per unit volume and specific weight,  $\gamma$ , must be thought of as force per unit volume. The relation  $\rho = \gamma/g$  thus obtains. . ."

# The National Bureau of Standards In War Simplification and Standardization Work

by Lyman J. Briggs

*Director, National Bureau of Standards*

ON numerous occasions officers of agencies active in carrying forward the war program have stated that there is urgent need to minimize the number of sizes and varieties of goods of common consumption and of semi-processed materials from which these goods are manufactured. The simplified practice service of the National Bureau of Standards has been expanded (about 70 per cent) to comply with the rapidly increasing need for this service by such agencies. The Bureau's simplified practice procedure has been revised to minimize the time required to bring about simplification, in each case with the thorough cooperation of the parties at interest.

In May, 1941, the National Bureau of Standards and the Office of Production Management devised a plan of cooperation on the subject of simplification.

Since that time the cooperation of the Bureau has been continuous, with the result that at present very nearly all of the work done on simplification bears immediately on the war program. To an ever-increasing degree the project managers of the Division of Simplified Practice are being regarded by WPB and OPA as consultants on problems involving conservation, substitutions, priorities, allocations of materials, which find at least a partial solution in the elimination of unnecessary sizes, varieties, types, models, etc., of manufactured products.

The Bureau loaned the Chief of the Division of Simplified Practice to assist in organizing a Simplification Branch in a new Bureau of Industrial Conservation in the Office of Production Management, as a means of integrating all of the activity in the field of simplification.

## NBS Recommendations Used

Three simplified practice recommendations, developed under the procedure of the National Bureau of Standards at the request of the Office of Price Administration, later justified the writing of the Introductory to WPB Limitation Order No. L-42 for plumbing and heating supplies.

Simplified Practice Recommendation R183-42, Brass or bronze valves (pressure ratings), which effects a reduction in variety from 11 pressure

ratings to 5, and R184-42, Iron body valves (pressure ratings), which eliminates 9 pressure ratings, became Schedule I in that Limitation Order.

Simplified Practice Recommendation R185-42, Pipe fittings (grey cast iron, malleable iron, and brass or bronze), which makes possible a reduction from 3,566 varieties to 2,969, became Schedule II in the same Order.

The War Production Board has requested the Division of Simplified Practice to submit suggestions and material for the simplification of more than 15 different manufactured articles, as a means of conserving scarce and critical materials. The results of that work will be used by WPB in drafting various conservation and limitation orders.

## WPB Orders Refer to Recommendations

Some of the existing Simplified Practice Recommendations are identified in current WPB orders. For example: R155-40, Cans for fruits and vegetables (names, dimensions, capacities, and designated use), is mentioned in Conservation Order M-81, and R92-38, Hard fiber twine and lath yarn (ply and yarn goods), in General Order M-84.

Since December, 1941, 10 new simplified practice recommendations have been added to the effective list. Also, many existing recommendations are undergoing emergency revision for the purpose of further reducing variety to conserve materials, and increase production.

It is recognized not only by the interested Governmental agencies but also by producers, distributors, and consumers, that there is urgent need for commodity standards fixing performance requirements, construction criteria, quality, grades, and methods of tests. Commercial standards, as developed under the auspices of the National Bureau of Standards, are nationally recognized as a basis for testing, grading, labeling, and marketing staple merchandise, and they furnish exactly the kind of standardization service needed at this time: (1) to conserve scarce materials; (2) to provide bases for price control; (3) to improve national efficiency through concentration on necessary grades and qualities; and



- (4) to provide specifications for emergency purchases, admitting suitable substitutes for scarce materials.

### Recent Commercial Standards

Several examples of commercial standards recently developed are referred to briefly below.

A commercial standard that will provide a basis for distinguishing between satisfactory and unsatisfactory utensils as a means of conserving scarce materials, labor, and transportation is the one relating to enameled utensils which will replace aluminum, stainless steel, and copper utensils. This standard, CS100-42, provides performance requirements and methods of test for thickness, solubility, resistance to thermal shock and impact, capacity, and other criteria which affect the quality of enameled utensils for cooking, household, food storage, and hospital use.

There is under development a commercial standard for so-called "glass-lined" steel tanks as a substitute for copper and monel metal water tanks in those areas where the corrosive action of the potable water is high, and where ordinary galvanized steel tanks require too frequent replacement.

A commercial standard that will be of material assistance in providing greater safety in gas floor furnaces, improved performance, conservation of scarce materials, and direct guarantees from the manufacturer and from the installer to the purchaser, CS99-42,\* became effective for new production on May 25, 1942. This standard provides minimum specifications for the construction, sizing, placement, installation, venting, and gas connections of gravity circulating type gas floor furnaces which are being installed in large numbers of bungalows and small dwellings in natural gas areas. As an important aid to the war effort, the War Production Board has requested the immediate printing of this standard, and also a similar standard, CS101-42, for oil-burning space heaters. The last-named standard provides construction requirements, performance requirements, methods of test and rating, corrections for altitude, publication of ratings, and a uniform method of informative labeling for heaters which will be used in low-cost low-rental housing in areas where coal is not readily available. In line with the general administration policy and requirement of the War Production Board that coal be used for heating as far as practicable, work is going forward rapidly on the development, prior to the fall heating season, of a commercial standard for coal-fired space heaters undertaken at the request of the Federal Housing Administration, and with the cooperation of testing laboratories, Governmental agencies, and manufacturers.

\* EDITORS NOTE: This standard has been submitted to the ASA by the National Bureau of Standards for approval as American Standard.

Not only does the National Bureau of Standards serve as the testing laboratory for Governmental purchasing agencies, for all types of commodities other than strictly agricultural products, foods, and drugs, but it takes an active part in the preparation of the specifications used by these agencies in purchasing and testing. It holds representation on 63 of the 69 technical committees of the Federal Specifications Executive Committee (with chairmanship of 35, vice-chairmanship of 8, and secretaryship of 4 of these technical committees). It also takes an active part in the preparation of Emergency Alternate Federal Specifications of which more than 330 have thus far been issued.

In recognition of the inability of manufacturers to obtain supplies of certain critical and strategic materials, the attention of every manufacturer on the Bureau's lists of "willing-to-certify sources of supply" is being called to these alternate specifications promptly upon their release. Steps are taken currently to keep these lists up-to-date in order to make this plan effective—a service much appreciated by both the Government and manufacturing firms.

### Study Scarce Materials

At the request of the Purchase Division, Office of Production Management, a study was made about one year ago by practically all of the Divisions of the National Bureau of Standards of commodities covered not only by Federal specifications, but also by specifications issued by other vitally interested agencies of the Federal Government, in view of the shortage of various materials including aluminum, chromium, magnesium, nickel, and zinc. The report containing the Bureau's comments and recommendations relating to substitutes for commodities involving the use of the above-noted materials was submitted not only to the Purchases Division, but also, upon request, to the Office of Price Administration and Civilian Supply. Upon request of the Consumer Commissioner, Advisory Commission of the Council of National Defense, the study was expanded to cover commodities using not only the above but other scarce materials or materials destined to become scarce, including cadmium, copper, lead, tin, and tungsten.

The Bureau recommended suitable substitutes in connection with specifications calling for critical and strategic materials to aid in minimizing the sizes, varieties, and grades of goods of common consumption. A member of the staff of the Bureau was designated as liaison officer to maintain contact between the National Bureau of Standards and both the Office of Production Management and the Office of Price Administration and Civilian Supply. The last-mentioned office was notified at that time that the facilities of the National Bureau of Standards can be utilized by that agency "for the development of

standards of quality and performance and for such investigations in this connection as may be necessary," in view of the announced plan for establishing "price ceilings" for certain staple goods, and the fact that when unrelated to quality, price has little or no meaning.

Because of the abnormal increase in the requirements for war purposes of certain materials formerly commonly employed in building structures and equipment, there has arisen the urgent necessity for a reconsideration of the materials of construction, and special emphasis is

now being placed on matters pertaining to safety and relative items. There has already been prepared for publication by the National Bureau of Standards in its Building Materials and Structures series, a document entitled "Recommended Building Code Requirements for New Dwelling Construction with Special Reference to War Housing." This document supplements appropriately a publication in the same series entitled "Plumbing Manual", the recommendations in which have already resulted in substantial savings of metal.

## House Bill Proposes Standards for Food Packaging

Congress now has before it a standard food package bill, H.R.6784, which was adopted by the National Conference on Weights and Measures in 1941. The bill, introduced on March 13 by Andrew L. Somers, chairman of the House Committee on Coinage, Weights, and Measures, has been referred to that committee.

The bill, which is interstate in its application, is limited to retail food packages. It provides, in general, for mandatory quantity standardization based on the following principles:

1. Standardization on the basis of the amount of food in the container.
2. Prescribed units self-defining as to quantity, in so far as practicable.
3. Prescribed units in regular series of integral multiples and binary submultiples of the principal units of weight and measure, in so far as practicable.

Specifically, the bill provides (a) that dry and solid foods be packaged on a weight basis

(1, 2, 4, 8, 12 ounces, 1, 1½ pounds, and multiples of 1 pound, avoirdupois); (b) that liquid and canned foods be packaged on a liquid-measure basis (1, 2, 4, 8, 12 fluid ounces, 1, 1½, 2, 3 pints, 2, 3 quarts, 1 gallon, and multiples of 1 gallon); (c) that for foods, except canned foods, which, at 68 F, are essentially or preponderantly solid, the packaging shall be on the prescribed weight basis; (d) that for foods, except canned foods, which, at 68 F, are essentially or preponderantly liquid, the packaging shall be on the prescribed liquid-measure basis; and (e) that semi-solid foods may be packaged on either the prescribed weight or the prescribed liquid-measure basis in accordance with general consumer usage.

The bill is essentially an extension of the Federal Food, Drug, and Cosmetic Act, the National Conference on Weights and Measures announces, and provides for enforcement by the Federal Food and Drug Administration.

## FTC Hears ASA Recommendations For Color Fastness of Textiles

Recommendations for the nomenclature to be used in designating grades of fastness of colored textiles to various color-destroying agencies such as light, perspiration, washing, etc., were made to the Federal Trade Commission last month by ASA Committee L14 on Fastness of Colored Textiles. The recommendations, which were also presented at a hearing held by the FTC at a meeting in New York April 10, were made by the ASA Committee in response to a request from the Office of Price Administration.

As recommended by the committee, the term "Color-Fast to ——" is applied to the highest type of resistance to loss of color. The blank in this term indicates the particular color-destroying agency, such as washing, light, perspiration, etc. Terms for other grades recommended by the committee were "Good," "Fair," and "Not Fast."

All of these terms are tied up with specific tests either in the Commercial Standard on Testing and Reporting Woven Dress Fabrics, CS 59-41, or in the proposed American Standards covering test methods now under development by the sectional committee.

## Drill Fittings Standard Postponed for One Year

The effective date for the Commercial Standard for Diamond Core Drill Fittings (CS17-42) has been extended to January 1, 1943 instead of January 1, 1942. The difficulty of securing raw materials, due to the priority situation, makes it almost impossible, the Division of Trade Standards announces, to begin production of the new EXT and AXT sizes. In addition, the changeover in shop production which would be necessary for production of the new sizes would slow up manufacturing during this critical period.



# Safety Standards Combat Rising Accident Rate

by V. A. Zimmer

*Director, Division of Labor Standards*

**W**ITH the entire nation straining every nerve and muscle toward the successful prosecution of the war in which we are now engaged, our supply of productive manpower has become a matter of prime concern. It is definitely known that our resources of skilled workers and of material from which skilled workers can be made are limited. This is why the conservation of these manpower resources is one of the "musts" in our national war effort.

The wastage of this precious asset of ours through industrial accidents and diseases has meant countless war units—guns, planes, tanks, ships—that were not produced and are not being produced, because men get killed and hurt on the job. The part that standards play in preventing such injuries is an important one.

There is little time now for research, surveys, or experimentation. With millions of workers engaged in production and millions more scheduled to come into our shops and shipyards during the months ahead, the outstanding job at hand is to apply now in every place of employment the tested preventive measures known to every competent industrial safety engineer and industrial health technician. We must do this if we are to get the top production so vital to victory. Every lost-time injury to a worker in a war plant means just that much less output.

## Accidents Can Be Prevented

There is a notion—still prevalent in this country, unfortunately—that there is little that can be done to prevent work injuries; that they are bound to happen every so often. This idea, which can so easily be proved erroneous, is perhaps the greatest obstacle we face in this campaign for the conservation of industrial manpower.

So ingrained is the acceptance of the ancient philosophical fallacy "accidents will happen" that it requires long and laborious argument to convince management and workers that they should buckle down to prevention programs that will stop cold this production menace in the form of work injuries. We have plenty of proof of how effectively accidents and injuries can be stopped. We have at hand tried and tested techniques for the prevention of accidents in the form

of standards of safety for industrial buildings and structures, machinery and equipment, and even work practices.

Good safety performance does not rest on luck. It can be obtained anywhere by intelligent and persistent application of safety supervision and safety practice as typified by standards of the type referred to above. To drive this fact home to every government contract plant in the country is the objective of the National Committee for the Conservation of Manpower in War Industries.

## Nationwide Drive Two Years Old

Two years ago the Secretary of Labor, recalling vividly the industrial accident toll during the World War, formulated this committee to develop a nationwide drive to stop manpower wastage through work accidents and injuries. May I here point out that this national safety program was from the beginning, and still is, directed solely to the objective of increasing production,—not to the saving of compensation costs or even the more important prevention of human suffering and social distress. In other words, in advancing this program we do not ask management and labor to look upon work injuries in terms of pain or money cost, but rather in terms of production loss and delayed delivery of urgently needed war supplies. If this seems a brutal approach, we have only to remember that individual suffering and money loss are of minor consideration in total warfare.

Enlisted in the service of the National Committee today are nearly 400 part-time volunteer safety engineers and accident prevention experts, augmented by a small staff of full-time safety specialists. These volunteers are not mere paper embellishments. They are daily carrying the safety message into every shop, plant, and establishment which produces materials and supplies for war. They bring directly to every war industry—big and little—not only a safety plea supported by

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**American Safety Standards are required texts in training program to conserve manpower**

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the most potent of arguments—national security—but they take into the plant likewise practical, realistic assistance to implement the message. This field force in the past 18 months has made more than 10,000 plant calls. It has made many thousands of recommendations and assisted in launching hundreds of plant safety programs. Never before has there been attempted a spot safety campaign of this magnitude or intensity. It may be said also that never before has there been so great a need. The influx of millions of raw, untrained workers into industry, and the mushroom growth and expansion of a multitude of plant operations, has resulted in a heavy increase of accidents and a tremendous loss of production time, this despite the aggressive fight of our safety artillery. Happily in the late months of '41 there was good evidence that the campaign had gained sufficient momentum to reduce materially the injury frequency rates shown during the earlier months of the year.

Even more potent in stopping manpower waste than the plant-to-plant safety drive is the coast-to-coast chain of safety courses set up by the National Committee in collaboration with the U.S. Office of Education. As of today approximately 20,000 men, drawn largely from plant personnel, are enrolled in short intensive accident prevention courses given, tuition free, by 70 engineering colleges throughout the country. Under tutoring by thoroughly trained, experienced safety engineers, these production workers are learning how plants operate without lost-time accidents and thus are able to increase output in the face of a shrinking labor supply.

### To Train 40,000 Safety Specialists

Management is so enthusiastically embracing this chance to develop safety specialists within its own operating personnel that by the end of this year at least 40,000 will have had this special training. It requires no great imagination to visualize the beneficial effect of 40,000 safety-wise wardens guarding against lost-time injuries in hundreds of war industries. The man hours thus saved will mean many more bombers, tanks, and ships for waging all-out war. It means good insurance against the tragedy of "too little and too late".

Throughout the plant visitation program of these 400 part-time safety engineers of the National Committee, the use of safety standards is being promoted. Strange as it may seem, there are countless industrial organizations in this country which until recently did not know of the existence of time-trying and proven safety standards which, intelligently and persistently applied, will in a large measure bring under control the wastage of manpower due to industrial accidents and diseases. The recommendations of these volunteer safety men are in most cases based upon accepted safety standards, recognized generally

throughout the country as being reasonable and effective.

In the training courses for safety specialists just referred to, certain safety codes of the American Standards Association are being used as teaching material. These codes provide the basis for an intelligent program of safeguarding hazardous equipment and operations in a wide variety of industrial plants. The students, becoming acquainted with the details of these standards in their class room work, are able to carry them back to their plants and apply them to specific operations and conditions which they may find therein.

Another type of standard most helpful in combatting this waste of man power due to industrial accidents are those contained in the safety codes, rules and regulations of the various states. Here too, we find standards approved by the ASA serving as a basis for corrective action directed to the elimination of unsafe structures, machinery, and equipment and toward the fostering of safe work practices. Throughout its regular work

A 25 per cent increase in industrial accidents in 1941 over 1940, with loss of sufficient man-hours to have built 30 battleships, moved the National Committee for the Conservation of Manpower to institute a nation-wide training program for industrial safety engineers. The courses are being given in some 70 colleges and universities.

American Safety Standards selected by the U.S. Office of Education and the U.S. Department of Labor as required texts were chosen to fit in with other material used. These standards have been published in a single document for the students' use:

- Safety Code for Floor and Wall Openings, Railings, and Toe Boards (A12-1932)
- Safety Code for Construction, Care, and Use of Ladders (A-4-1935)
- Safety Code for Use, Care, and Protection of Abrasive Wheels (B7-1935)
- Safety Code for Mechanical Power-Transmission Apparatus (B15-1937)
- Safety Code for Protection of Heads, Eyes, and Respiratory Organs (Z2-1938)
- Safety Code for Industrial Sanitation in Manufacturing Establishments (Z4.1-1935)
- Method of Compiling Industrial Injury Rates (Z16.1-1937)
- Specifications for Industrial Accident Prevention Signs (Z35.1-1941)

A complete list and description of American Safety Standards and of projects under way is available without charge from the American Standards Association.

with State labor departments and industrial commissions, the Division of Labor Standards of the U.S. Department of Labor continues its function of promoting the application of these and other safety standards to the problem in hand.

We need no new information to cope with the

present situation. We have ample material to work with. What is needed, now more than ever, is the immediate and thorough application of safety and health standards to hazardous conditions and processes wherever they occur in war production plants.

## Rudolph E. Hellmund

THE death on May 17 of Rudolph E. Hellmund, inventor, and chief engineer of the Westinghouse Electric and Manufacturing Company, is a severe loss to the technical work of all the organizations with which he had been active for many years. In the American Standards Association, Dr. Hellmund not only contributed his valuable technical knowledge to the work of the ASA committees on Preferred Numbers, electric and magnetic magnitudes and units, and on wire and sheet metal gages, but also as a member of the ASA Electrical Standards Committee and the ASA Standards Council, he took an active part in determining policies and approval on all American Standards. As chairman of the committee which prepared the standard on Preferred Numbers, Dr. Hellmund is credited with having had a leading role in bringing that basic standard to completion and approval as an American Standard. As this document becomes more widely used, it is proving to be one of the most valuable standards developed under ASA procedure.

Dr. Hellmund was also a member of the United States National Committee of the International Electrotechnical Commission and represented the USNC at a number of international meetings.

Dr. Hellmund was an inventor of note, holding more than 250 United States and foreign patents on electrical devices he had invented. In 1930 he was awarded the Lamme Medal by the American Institute of Electrical Engineers for his contributions to the design and development of rotating electrical machinery.

He was a native of Germany but came to the United States in 1903 and became a citizen in 1920. He studied engineering at the Technology College in Ilmenau and at the University of Charlottenburg. For two years after he came to the United States he worked as an assistant to William Stanley of Great Barrington, Mass., and then spent two years with the Western Electric Company as a designing engineer. In 1907 he joined the Westinghouse Company, where he was in charge of the design of all a-c and d-c railway motors from 1915-1917. After he was appointed supervisor of development of the company in 1921 he established the company's system of planning, executing, and financing all new engineering developments. In 1926 he was made chief electrical engineer, and in 1933 chief engineer.

Dr. Hellmund was a fellow of the American Institute of Electrical Engineers, a member of its

board of directors, and chairman of its standards committee. He was alternate representative for the AIEE on the ASA Standards Council.

In addition to the high standing he achieved in the United States, Dr. Hellmund's work also brought him international fame. As a result, he was invited to lecture before technical societies in all the important European countries, as well as in the United States and Canada.

Dr. Hellmund's sympathetic understanding of the viewpoint of others, and his rare ability to find points of agreement when no agreement seemed possible, will be sorely missed by the standardization committees on which he served, as well as by his company, and his many friends and acquaintances.

—R. T. Henry

*Chairman, Standards Committee, American Institute of Electrical Engineers.*

### ASA Invites Suggestions On Protective Lighting Draft

An ASA Emergency Technical Committee has just completed a draft of a proposed American War Standard on protective lighting of industrial properties. The standard which is intended to protect such properties from theft and sabotage includes recommendations on the minimum amount of illumination required for various classes of boundaries, yards, open areas, storage spaces, vital structures, etc.

The draft will be circulated to interested organizations and individuals for comment and criticism. Any one interested in the problem of protective lighting is invited to review a copy of the draft standard and submit his suggestions to the technical committee.

A copy of the draft can be obtained from the American Standards Association, 29 West 39 Street, New York, without charge.



*Courtesy Office of Emergency Management*

All shells are rigidly inspected for accuracy. Schools throughout the country are training inspectors in Ordnance inspection techniques.

## Ordnance Inspection

by Brigadier General R. H. Somers

*Assistant Chief of Industrial Service,  
Inspection, Ordnance Department*

**W**E ARE engaged in a war of a magnitude never before envisaged save in the minds of writers of fantasy, a war which has brought us face to face with Ordnance requirements of a size beyond the bounds of imagination.

The large scale production required for such a war has taxed the ingenuity of all in obtaining, or training, inspectors for our new types of non-commercial items of equipment. Our thousands of contractors require their own inspectors, in connection with their own responsibility, to produce in accordance with their contracts, while the Ordnance Department has recruited, trained, and placed in these same factories inspectors not only to assist the contractors in their production activities, but also to supervise the production and acceptance of the equipment being produced, always being on the alert to insure that the intentions of the designing engineer are being fulfilled and that the equipment, when it reaches the hands of our soldiers in the field, will be the best obtainable.

The personnel for the manufacture and acceptance of the material demanded by Ordnance, which personnel includes the inspectors, has to be recruited from any available source, bearing in mind that we cannot borrow from Peter to pay Paul. It is extremely difficult for personnel which by and large has been tremendously competent in its peace-time pursuits to enter into an entirely new intellectual atmosphere, but this has been done successfully.

It must never be overlooked, however, that production is the great need. Inspection must not be allowed to become a barrier for production to hurdle, but must be made an assistant and expeditor to production. Although standards must not be allowed to drop below a practicable minimum, inspection must look upon itself as having a primary duty of focusing the spotlight on troublesome items as early in the process as practicable, helping correct bad situations by suggestions, etc., and thus preventing the production of sub-standard material.



The general problem, however,—the acceptance of standard material—did not enter the picture upon the advent of the present emergency. It has hung over the Ordnance Department since the last World War, and accordingly it has received much study over many years, the fruits of which are now being enjoyed. Specifically, the methods of inspection have been anticipated and, as far as practicable, drawings and specifications have been prepared, courses of training for inspectors laid down, schools in which these courses are given have been inaugurated, methods of gaging have been set up, etc.

The advent of the second World War, therefore, did not catch the Ordnance Department unprepared. It is true, however, that the necessity for the adoption of new and improved types of material, the taking over of the manufacture of material of foreign design, and similar activities, have thrown a tremendous burden upon our engineering forces in spite of our previous planning. In the case of foreign designed material it has been necessary to change drawings and specifications to the standards of American practice. Many items of entirely new design have had to be placed in production before designs have been perfected, but in general the burden has been one of an infinite number of detail problems rather than the necessity of radically changing basic principles.

From page 1, General Inspection Manual of the U.S. Army Ordnance Department, the following is taken: "Inspection is fundamental to detect and correct errors in workmanship; to ensure the use of specified materials; and to assure that the item complies with the approved design" and "as a means of correcting future deficiencies."

#### **Producer Responsible for Accuracy**

Basically, it should be possible to reduce Ordnance inspection to a very minimum, since it is the responsibility of the contractor in each and every case to adhere to his contract and to the drawings and specifications connected therewith, and to make such inspections and tests himself as will insure that only conforming material will be submitted for Ordnance acceptance. Under ideal conditions, Ordnance inspection should be reducible to a spot check of raw material and process inspections and a final visual and performance inspection of the completed article. The Ordnance Inspector in the contractor's plant is available at all times to assist the contractor to interpret drawings and specifications when questions are raised.

Obviously, the duty of an inspector is primarily to see that the material delivered is in accordance with drawings and specifications under which it has been produced. However, when material is not in conformity, but does not deviate too large a degree from drawings and specifications, it is frequently in the interest both of

economy and of the conservation of materials to make whatever use is possible of it. The inspector brings such cases to the attention of higher authority and frequently will be authorized to accept it at a reduced price.

It is of the greatest importance that standard material be accepted under exactly similar requirements in many different localities. In order that manufacturers may have easy access to the Ordnance Department every effort has been made to decentralize, in so far as practicable, the responsibility connected with the inspection and acceptance of Ordnance.

#### **Schools Train Inspectors**

To ensure that inspectors have the same background, schools have been established throughout the country at arsenals, universities, in connection with industrial plants, and in night schools in connection with high schools, for the purpose of training inspector personnel. Some of these schools are for basic training only and do not necessarily prepare the inspector for other than a minor position. Other schools are of a more advanced nature and train inspectors for the inspection of specific items. Attendance at these schools, in many instances, has as a prerequisite that those attending have previous inspection experience. Experienced inspector personnel has been used in connection with the training of other inspectors whenever possible.

Even with all of the training program which has been set up, it must be realized that many inspectors necessarily have gone into plants with inadequate training. However, it has always been the aim of the Ordnance Department to place these inexperienced and not fully-trained inspectors under those who have had previous experience and thereby carry on the training of this less experienced personnel.

A great deal of thought and study also has been given to the equipping of our inspectors with adequate and appropriate tools for their use in expediting inspection. Our Gage Section has achieved remarkable results in securing the design of gages, fixtures, and similar instruments and in planning methods for their procurement.

#### **Develop Standards for Finishes**

A new member of this family is a set of Ordnance Finishes. The Ordnance Finishes required are normally indicated by appropriate symbols used on component drawings. These symbols are designated in specifications for the manufacture and inspection of Ordnance materiel. The necessity for examples of Ordnance Finishes during normal times is not as critical or important as during an emergency like the present when inspection staffs must be increased many thousandfold, resulting in the use of less efficiently trained inspectors. It soon became evident that some device must be placed in the hands of in-



spectors which they might use as a guide in their interpretation of what is meant by the symbols on the drawings.

There are now being procured, and are nearly ready for issue to the Districts, sets of Ordnance Finishes which are, in brief, specimens representing the minimum acceptable finish for each given finish symbol. The sets include composite specimens for certain grades of finish as obtained by using different types of machine. This method which is also in use by various commercial organizations is based on a classification of finishes of the kind proposed in a standard published for trial and practice under the procedure of the American Standards Association.

It involves no deviation from accepted practice that part of the duties of an inspector are those which serve as a "means of correcting future deficiencies." Statistical methods of quality control, as outlined in the American War Standards, Guide for Quality Control (Z1.1-1941) and Control Chart Method of Analyzing Data (Z1.2-1941),<sup>2</sup> constitute an important instrument for implementing this function which is being put to a considerable and growing use in the Department. The prompt and continuous plotting of inspection results in chart form from day to day, or even hour to hour, makes the development of unfavorable quality trends evident almost immediately, so that steps can be taken to ferret out the causes of such trends and eliminate them. The placing of "control limits" on the charts, indicating the bounds within which satisfactory product should fall, provides a definite indication as to when the product represented by a plotted point differs significantly from expected quality.

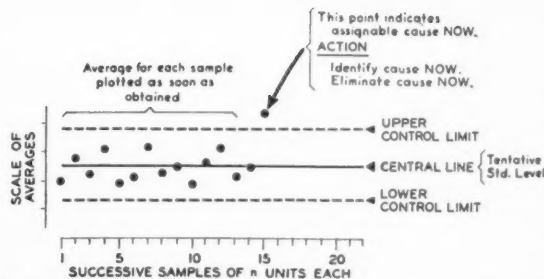
### Quality Control Now in Use

While the initiation, layout, and operation of detailed quality control plans must largely be carried out close to the job, it is desirable that uniform principles and procedures be followed in such work. The standardization of these uniform principles and procedures, and the approval of the more important plans worked out on the job to accord with them, is a matter of great moment to the Ordnance Department.

The method is being used to a considerable extent in the Ammunition Division of the Industrial Service, at the Aberdeen Proving Ground, at certain Arsenals, and elsewhere.

The Ordnance Department has the advantage of having with it two members of the Technical Committee of the American Standards Association which formulated the standards; namely, Lt. Colonel Leslie E. Simon and Dr. W. Edwards Deming. Colonel Simon is a Regular Officer at

<sup>2</sup> The third American War Standard, Control Chart Method of Controlling Quality During Production (Z1.3-1942) has just been completed and published. See article on page 109, INDUSTRIAL STANDARDIZATION, May.



The Control Chart Method of Quality Control recommended and described in three American War Standards "is being put to a considerable and growing use in the Ordnance Department."

present stationed at the Aberdeen Proving Ground. He is in charge of the Ballistic Research Laboratory at that place and therefore is available for consulting purposes only.

The Bureau of the Census has loaned to the Ordnance Department, for a period of six months, the services of Dr. Deming who is chiefly engaged in setting up training courses and training additional personnel in the use of the method. The application as a whole is under the supervision of G. D. Edwards, Director of Quality Assurance of the Bell System.

The problems of inspection are many and varied. The Ordnance Department is receiving the utmost cooperation from American industry in securing vitally needed material, and in view of the confused and emergency situation the success of industry in the production of such material is a remarkable achievement. The ability of industry to turn from its normal peace-time activities and practically recreate itself from the ground up to produce enormous quantities of special materials with a remarkably small percentage of rejections, is a tribute to American versatility.

### Home Economics Association Plans Thirty-Fifth Annual Meeting

The thirty-fifth annual meeting of the American Home Economics Association will be held in Boston from June 21 to 24. It will be a working convention for putting state associations and the national organization on an all-out wartime footing.

Dr. Gladys Branegan, dean of the Division of Household and Industrial Arts, Montana State College, Bozeman, is president of the Association. Mrs. Dora Lewis, head of the department of home economics of New York University, New York City, is chairman of the program committee.

The American Home Economics Association is a Member-Body of the ASA.

# How Standards Are Used In Army Procurement

by Colonel Byron A. Falk<sup>1</sup>

*Chief, Standards Branch, Resources Division,  
Headquarters, Services of Supply*

**S**TANDARDS are playing an important role in facilitating the large-scale production of armaments and munitions under our vast War Program. The existing degree of standardization is reflected in the rate of production realized. As between like articles those which were standardized to the highest degree have been produced the most readily and with the widest participation of small as well as large manufacturers. Recently adopted articles not yet standardized ordinarily go through a process of "cutting and trying" before mass production begins. When large-scale production is first undertaken there is a tendency for initial manufacture to be more or less restricted to those who have participated in the developmental program. Only when the article is well established and has been standardized in manufacture as well as in its military characteristics can industry as a whole participate in its duplication on an "all-out" basis.

In this respect the Army is more fortunate than the Navy. The life expectancy of naval ships, their costliness, the length of time to produce and the limited number of yards, is such that each lot of "sister ships" tends to be unique and in a class of its own. In fact each such class represents the stage of the art achieved by the generation of men which produced it. Contrast this situation applying to naval ships with that for army motor vehicles. In the case of the latter, the requirements are large and continuous, life expectancies are relatively short and the maintenance problem makes parts standardization mandatory. The same applies to army artillery and rifles, only more so. In the case of army ammunition, the degree of standardization determines availability of an item both for mass production and for use. Millions of rounds of each type are required and must be produced.

## Mass Production of Ammunition

In the case of ammunition, specifications must

<sup>1</sup>Colonel Falk represents the War Department on the ASA Standards Council. Colonel J. K. Clement, Ordnance Department, New York; Major E. L. Cummings; and Captain J. H. Fitch are alternates. The Navy Department is represented by Rear-Admiral W. H. P. Blandy, Bureau of Ordnance; and by the Chief, Bureau of Ships.

be so standardized as to permit large-scale mass production, broken down by individual operations and parts assigned to different manufacturers. Standardization here makes it possible for small as well as large manufacturers to cooperate in the production of a finished whole. By the use of standard components and parts, it is possible for one manufacturer, often a small one, to produce on a long-run basis all of a given identical part required in common by many other manufacturers using that part in their respective assemblies. To make certain that full benefit is realized from parts standardization, the government often purchases its parts on separate contracts and then furnishes these parts to the assemblers as "government furnished equipment" or "GFE".

## Industrial Standards Also Used

In many cases, components, parts, and finished articles made in accordance with industrial standards are procured for the use of the armed services. This is more particularly true in the case of things of ordinary civilian usage, such as underwear, passenger automobiles, building construction material, etc. However, tolerances under industrial standards tend to be too broad and quality of performance to be unsatisfactory for military usage. In a desire to avoid wastage incidental to rejections, the armed services want to accept the greatest practicable proportion of the "run of the mill" production. Also to assure themselves of the production of all qualified manufacturers, the armed services so far as practicable fit their specifications to the machines which are to make the articles described. In other words, standard specifications of the armed services, in the main, permit the following of industrial standards and the use of existing machine tools.

In those cases in which, clearly, the pre-existing industrial standards and machine tools will not suffice, small contracts are sometimes awarded for the sole purpose of developing a new source of supply. In the past these have been called "educational orders". Under such contracts, the manufacturer is educated in producing according to military standards and takes action to prepare his factory for future large-scale production.

The need for standards and specifications has been clearly recognized by the various arms and services of the Army and Navy ever since the end of the first World War. The development of thousands of specifications by these agencies covering a majority of their requirements demonstrates fully their essentiality, especially in time of war. Federal specifications covering articles purchased by the non-military as well as the military agencies of the government are widely utilized by Army and Navy procurement officers. The Army and Navy cooperate with the Federal Specifications Executive Committee in the preparation of Federal Specifications and in the formulation of emergency alternate specifications covering the use of substitute materials.

U.S. Army specifications are coordinated by the Standards Branch, Resources Division, Headquarters, Services of Supply. These specifications follow the same outline of form used in the preparation of Federal and Navy specifications. So far as practicable, a single U.S. Army specification is used in the procurement of each given type of munitions.

The responsibility for the preparation and revision of each specification is charged by the Standards Branch to a single agency. In many cases that same agency purchases and issues to all other Army services the articles described in that specification. This leads naturally to a very considerable degree of War Department standardization in each kind of material required.

The Standards Branch welcomes suggestions and recommendations relating to further simplification and standardization of Army equipment

and supplies with a view to facilitating production. The American Standards Association has been of material assistance to the Standards Branch in this connection. Many simplification and standardization proposals and projects have been referred to the American Standards Association for coordinating with industry in order to bring about the development of American Standards which could be used in a War program. On the other hand, the American Standards Association refers to the Standards Branch proposed American Standards for comments, recommendations, and eventual concurrence prior to approval.

The development of new and substitute materials to take the place of critical items means the formulation of additional standards. However, standards alone do not accomplish the job unless there is a disposition on the part of management to convert its plant to produce munitions and other needed articles in accordance with specification requirements.

#### Industry Can Help

Industry, in cooperation with standardizing agencies of the government or working under the procedure of the American Standards Association, can contribute materially to the development of standards mutually satisfactory to all interested parties. Further, the adoption by industry generally of the outline of form of specifications employed in the preparation of Army, Navy, and Federal specifications can do much to facilitate the eventual reconciliation of the differences now existing between present commercial or industrial standards and those of the armed services.



The precision techniques of a former auto plant, based on the use of standards in mass production, help this plant in the exacting job of making machine-gun barrels

# Getting Out the Guns

## Prime Contractor Finds Use of Standards Makes Subcontracts Click

by Thomas Roy Jones

*President, American Type Founders, Inc.*

WHEN American tanks supplied to the British forces rumbled into the Libyan war zone last year, they carried guns made by the American Munitions Division of American Type Founders. The normal business of ATF is to build printing presses and cast type. It is now a prime contractor in making guns. The successful conversion of ATF activities is the result of long-range planning and careful coordination in which standardized methods have played an important part—from the viewpoint of management, as well as engineering.

In changing over to the manufacture of a product new to the company on a large scale, at high speed and to exacting dimensions, ATF was faced with the choice between two alternatives: tremendous expansion or wide subcontracting. The latter solution was preferred since the facilities of the subcontractors would become available to ATF at once.

### ATF Uses Standard Procedure

Without formally writing it down, ATF has developed a routine or standardized procedure in "processing" a job it has taken on as a prime contractor. This is done by means of a subcontracting plan which involves three major parts: (1) a survey of the facilities of prospective subcontractors to determine their capacity to produce, with a view to quality as well as quantity; (2) instructing the subcontractors fully in regard to the requirements of the government's orders and assisting them, where necessary, in meeting these requirements; and (3) establishing and maintaining a strict production schedule so that parts and sub-assemblies will smoothly and steadily flow together into the final product. The details of such a plan, involving the coordination of numerous subcontractors, cannot be worked out overnight. However, ATF had realized long ago the probability of peace-time production being pushed aside by war-time work, and had laid out its course for going in more and more for government orders when the civilian market would shrink. Several years ago, long

before the lend-lease bill came through, the company began to bid on government contracts. It acquired experience with this kind of work—among other things, through its dealings with the Arsenal—and systematically built up a wealth of information on government contracts. Thus, when in 1941 the British government was looking for an American firm able to supply a complete tank-gun, ATF felt confident it could do the job. The subcontracting plan has been worked out as described herein.

### ATF Engineers Visit Subcontractors

Before the services of a prospective subcontractor are accepted, ATF field engineers visit his plant to inspect his methods of manufacturing and tooling. Their report to ATF headquarters includes a list of the sizes and capacities of the subcontractor's equipment and the special tools he will require to produce a given component or sub-assembly. Either of two arrangements may be made. The subcontractor does his own tooling or ATF supplies tools adaptable to the subcontractor's equipment. In the former case, ATF—which pays for the tools—checks their design and furnishes the subcontractor with a set of drawings of the inspection gages that will pass work lying within the limits specified by the Ordnance Department. This enables the subcontractor to make or order his own working gages.

### May Plan Production Layout

If it is preferable to have ATF process engineers make the production layout for the subcontractor, they assign specific jobs to his machines and determine the sequence of operations and the kinds of tools required. The ATF prepares a set of operation sheets and a set of tool drawings which are submitted to the subcontractor for his comments and suggestions. When approved in final form by the subcontractor, these data are considered by both parties as specifying a procedure adequate for getting out the product according to government specifications and on ATF's production schedule.



Whether the tooling is supplied by the subcontractor or by ATF, the latter keeps in close touch with the progress of the work in the subcontractor's plant and stands ready at all times to help him keep up with the schedule. For this purpose, ATF field engineers visit each subcontractor's plant regularly or an ATF man is stationed there all the time. Any cause of trouble or delay is reported at once to ATF headquarters and if necessary, ATF sends an expert to get matters straightened out. When one subcontractor had difficulties with a worm-gear cutting job, an ATF specialist flew out by plane, diagnosed the trouble as due to the fact that a machine spindle was 0.008 inch out of alignment and after having adjusted it, returned within twenty-four hours.

The vast system of responsibilities is carefully balanced and its control centralized in ATF. In regard to materials, the subcontractor is responsible for getting a certified analysis of the chemical composition of all materials where this is required by the Ordnance Department. He is also responsible for having acceptance tests on materials performed and witnessed by Ordnance Inspectors; for the inspection of a first sample casting that he receives from a supplier and has to process; for the checking of tools, jigs and fixtures supplied by ATF<sup>1</sup> and for the checking of the first piece produced with this equipment. Finally, the subcontractor is responsible for the processing of parts or assemblies assigned to him and for their final inspection. For the sake of central coordination, ATF is authorized to check the subcontractor's operations and processes, also his inspection methods. To secure uniformity in the latter respect, ATF makes the final inspection

<sup>1</sup> As mentioned before, the drawings of these tools, jigs, and fixtures are first approved by the subcontractor.

gages to be used by its inspector in the subcontractor's plant—even though the subcontractor makes his own working gages. Also, to avoid any return flow of rejected product, which would hamper the production schedule, there is a general rule that no work shall leave the plant of the subcontractor without having been accepted by an Ordnance Inspector.

### Standardization Helps Coordinate

In its entire subcontracting business, ATF strives for the greatest possible flexibility by putting performance first and method of performing, second. Yet, it is obvious that a comprehensive plan of coordination with so wide a scope could not be carried out effectively without a high degree of standardization—understood here as a powerful tool of coordination in the hands of executive management, rather than as a rigid formulation of uniform methods and techniques. As to the technical standards for the products, there is little ATF can do about them since they are set up by the Army or the Navy, as the case may be. As a rule, these standards cannot be changed. However, occasionally ATF finds that a change in the specifications would be advantageous. For example, a steel different from the one specified may be more readily available, or easier to machine,—yet it may meet the requirements just as well. Or, while a specific kind of machine finish is specified for a given piece, another operation may be found to give it a better surface quality, to the benefit of its performance or useful life. Such matters are taken up with the Army or the Navy and by proving its point, ATF has been able to get a proposed change adopted. The flexibility thus allowed in complying with the original specifications benefits the government as well as its contractors.

Dimensional accuracy is one of the primary



Standards help contractors and subcontractors to roll out equipment like this in record time

requirements for having component parts and sub-units fit together and function correctly when assembled. For this reason, ATF in its relations with subcontractors benefits greatly by American Standards affecting all factors governing the attainment and maintenance of specified limits. For example, ATF has established rules for gaging based on standards approved by the American Standards Association, including specifications for the design of gages as complete tools, as well as accuracy requirements for the gaging members.

This brief review of ATF conversion from peace-time production to intensive war effort—

expected to run this year into many times its normal dollar volume of business—can only be sketchy. However, it may show how the success of the conversion is due greatly to thorough planning along standardized lines. The assignment of specific jobs to specific men and machines means that a standard system of rating human and mechanical capacities is being applied and this, combined with a standardized follow-up system, enables ATF to control its production planning within narrow time limits and to get out the guns in a steady flow to the fighting forces.

## Standards Smooth the Path Of the Subcontractor

by W. L. Fenn

*Vice-President, Fenn Manufacturing Company*

**"MORE** production faster"<sup>1</sup> is of no use to the War machine unless the new products being put into the field of battle are interchangeable with the parts already in use.

Next to "more production faster," the word "interchangeable" probably becomes as important as any word in our English language today. Because of this fact, representatives of Prime Contractors when contacting a prospective subcontractor stress forcibly the importance of the word "interchangeable" on the minds of the subcontractors. After a few minutes of thought, one can well understand why the Prime Contractor stresses the importance of interchangeability in the parts to be made. If they are not interchangeable it would have been better not to have made them.

Although most work which Prime Contractors are doing is a military secret, the subcontractor should know thoroughly the unit for which he is making parts. We have found this helpful in our business during the last three years of defense work as a subcontractor. Many times a tolerance will look foolish to a subcontractor until he sees how that tolerance functions in the unit for which the part is being made. There are many cases where the subcontractor will not be allowed to see the unit and in cases such as this the Prime Contractor should use as much care as possible

in explaining the importance of close tolerances so that the subcontractor will get the right feeling about the part he is manufacturing. Unless the subcontractor realizes that the close tolerance is important, it is likely to affect the entire production of his plant and it may cause costly delays in the production line of the Prime Contractor.

From our own experience, we know that familiarity with the unit pays dividends. For example, on a job we are doing for General Electric Company we are making several parts on a production basis for a certain section of their turbine supercharger for airplane motors. All of the key men in our organization have seen this supercharger section in operation and thoroughly understand and appreciate how important the close tolerances are on every part we manufacture.

Many times the fact that we know the importance of strict tolerances is the excuse in itself for overcoming the difficulties which arise in obtaining those close tolerances. Where there are mating parts, such as a right and left hand, each subcontractor should make the two parts. The reason for this is that the one concern can then coordinate the tolerances of both parts. If we make the right hand of a certain part and some other company made the left hand, we might work to the high limit and the other company might work to the low limit; hence these parts would not go together as well as if one company made both parts, working to the same tolerance, either high or low. Specifically, we have found

<sup>1</sup>"The two most important factors of the war today are more production and faster," Donald Nelson, War Production Chief, has declared.

this true in the manufacture of General Electric supercharger parts as well as parts for many other Prime Contractors. This is an important factor which Prime Contractors often overlook, but which they should consider seriously in releasing sub-contracts. It has been our experience that when one subcontractor makes mating parts the assembly of the parts in the Prime Contractor's factory has been much easier.

### Tolerances Revolutionary

Some of the tolerances placed on parts today in order that Prime Contractors may obtain absolute interchangeability of parts are revolutionary even within the last year and a half. Two years ago, companies such as ours who have been in the special machinery business for thirty years had never heard of a tolerance as close as plus .0002 inch, minus .0000, and two years ago if anyone had told us we would be working to tolerances like the one mentioned above, we would have thought he was absolutely insane. For the Prime Contractor to maintain interchangeability, however, which is his headache today, close tolerances must be met; otherwise there is no end to the troubles when the parts go into his assembly line.

We have found machine-tool equipment one of the most important factors in maintaining close tolerances. During the past three years we have practically retooled our entire plant. Like almost anything else, in order to maintain modern, up-to-date standards, one must have modern up-to-date equipment. Naturally there are different classes of tolerances and it seems to us that as soon as one concern discovers that a subcontractor is capable of meeting close tolerances, all other companies contacting him want him to do close tolerance work. This is a very important part of subcontracting. If your equipment is not capable of close tolerances do not try to do work which requires tolerances of tenths. Find work to fit tolerances of which your machine tools are capable.<sup>2</sup>

Another aid to a high degree of interchangeability of parts is to simplify manufacturing methods. The simpler the manufacturing methods, the easier it is to inspect the parts in the process of manufacture, which is important when attempting to obtain close tolerances. I doubt if there are many jobs going through our plant as they were laid out on paper before being submitted to the factory. Sometimes it is hard for the layout men to acknowledge the fact that manufacturing methods should be changed, but in all cases it is necessary, and should be done as soon as the need for simplification of manufacturing methods is brought to light in the plant. Grouping operations in the proper sequence lends itself to better and easier gaging of parts in process.

<sup>2</sup>The Stanley Plan for locating subcontractors (see INDUSTRIAL STANDARDIZATION, May, p 112) includes the tolerances required in the coded information published.

which means less scrap and "more production faster."

Every subcontractor, no matter how large or small, should set aside a room somewhere in his plant to be used only as a master gage room. This room should be used for checking fixtures used on the job to check the parts in process. A man buying a new gun and using old ammunition will find it will not properly function in the gun. This is the situation in which we found ourselves not so long ago. We had all the latest type of machine-tool equipment capable of producing the most accurate work possible, but we had improper facilities for gaging the degree of accuracy the machines were capable of producing. To overcome this situation, we had to make a master gage room, air-condition it, and insulate it so that it would maintain a temperature of 68 F at all times. This has been adopted as the American Standard reference temperature for gages. This room is being used 24 hours a day to check our fixtures and our gages which are used in the manufacture of parts. This is necessary to maintain tolerances which in turn maintain the interchangeability of parts.

Some of the closest tolerances on parts which we are manufacturing also have to be inspected in this room. Many times we have had parts inspected in the Prime Contractor's inspection department and have had them thrown out because they were not correct; whereupon we found, upon having them returned to us and after leaving them in our



Accuracy is the keynote for both prime and sub-contractors. Here an electro-lymit gage checks the accuracy of shell dimensions in ten-thousandths of an inch



constant temperature room for at least 24 hours, that their sizes are correct. In a situation such as this, the Prime Contractor must accept the parts as right, the constant temperature room having settled the argument. Some of the tolerances which draftsmen put on drawings these days are so close that the only way to check them is in a constant temperature room, even though this method of inspection is not adways practical. A problem which we feel, or like to think, all Prime Contractors are working on constantly is to make the tolerances a little more lenient; this lends to more practicability in the production of the parts which in the end means "more production faster."

One more important point in obtaining interchangeability of parts is that the Prime Contractor should allow the subcontractor to make his own tools when he has the facilities. We have had one experience where the Prime Contractor spent \$50,000 for tools for two parts

which they later sub-contracted to us. When we took the job over, they asked us to make our own tools, thinking that our production would supplement theirs. In the end, we handled the entire production of these two parts and our tool cost was less than \$10,000 as against the \$50,000 the Prime Contractor spent for the same tools. Many times the smaller concern can tool up a job in his own plant for a great deal less money than a Prime Contractor can tool it up for his plant or for the subcontractor's plant because so many times the Prime Contractor does not know the equipment of the subcontractor. Often, too, the Prime Contractor will supply tools to the subcontractor only to find that the subcontractor's equipment does not lend itself to the layout of the tooling the Prime Contractor supplied.

Constant hard work towards standardization of methods will eventually win the fight for interchangeability which means beating the Axis.

## War-Time Problems Of a Company Standards Department

by L. F. Adams

*Assistant to the Vice-President  
and Manager of Standards Department,  
General Electric Company*

**S**HOULD a Company Standards Department continue to function during the War Emergency? It is reported that a few companies have recently discontinued their Standards Departments for the time being but the reasons for this are not clear.

From the time of its organization the General Electric Company has found it necessary to have standards so that its products can be duplicated and the parts made interchangeable. In time it became necessary to purchase from other manufacturers many small parts, and here standardization became necessary so that these items could be obtained from different suppliers and yet be assured that they were interchangeable. During the last war standardized parts and products became essential so that the manufacturing facilities of this country could be fully utilized with the assurance that the individual pieces could be used interchangeably by the Army and Navy no matter where they were needed.

In the present War Emergency the General Electric Company finds that standards become

more and more important and essential. The Army and Navy have called on us to produce not only the electrical products which we have been building for years, but many new products, some of which were totally unfamiliar to our engineering and manufacturing personnel. As a result of this rapid change from civilian to war production we have found that the Standards Department, instead of having less to do, has been faced with an increasing number of problems requiring prompt solution. If ever there was a need for a Company Standards Department, it is now.

One of the first and most important problems presented was that of distributing information on current Government specifications involved in our various lines of manufacture. For years we have had a Navy Data Book giving information on and comparing Navy material specifications with G-E specifications. Since we had had considerable experience of long standing on Navy specifications we patterned our new Government Materials Book after our old Navy Data Book. As



an aid in the proper selection of materials for Government contracts this endeavor to familiarize our design engineers with the requirements of Government specifications and to compare these requirements with G-E material specification requirements has been quite successful.

The Government Materials Book is given broad distribution in the G-E organization for three reasons:—

1. It is difficult and sometimes impossible to obtain sufficient number of copies of new and changed Government specifications to take care of all our interested personnel at the different Works.

2. The filing of the various Government specifications in their respective numbering series and different sizes presents a real problem in each department of the Company.

3. With the rapidly increasing personnel and duplication of manufacture at different Works the Standards Department is not always in a position to know or learn of all the interested Works, departments, and individuals interested in a particular specification.

This book, now issued in two volumes, is a convenient reference that obviates the necessity of maintaining, except in special instances, a bulky and cumbersome file that may or may not be up-to-date. Most of the data is compiled by a staff of metallurgists in the Schenectady Works Laboratory who are supplied with new and revised Government specifications as rapidly as we receive them. The book is at present divided into two parts as follows:—

#### Part 1.

- A. Cross reference between G-E Specifications and those of Government agencies, ASTM, SAE, ASME, etc. Government agencies include Army, Navy, Air Corps, Federal, etc.

- B. Cross reference Army, Air Corps, Federal, etc. to G-E materials. This includes description of material and differences in characteristics.

- C. Cross reference Navy to G-E materials including description of material.

- D. Cross reference G-E to Navy metallic materials including description of material and differences in characteristics.

- E. Cross reference G-E to Navy nonmetallic materials including description and differences in characteristics.

- F. Latest issue letter and date of Government specifications according to the Standards Department record.

- G. Special notes on Government requirements issued periodically for the guidance of design engineers. This section includes special authorizations, advance information, etc.

#### Part 2. Extracts of Government Material Specifications.

These extracts give all essential characteristics of Government materials and are numbered and filed by the Government specification num-

ber, including issue letter, if any, in accordance with the order given in Part 1, F.

#### Other Problems

Other Standards Department problems involve the expansion and elaboration of the G-E Standards Books described in the March 1939 issue of INDUSTRIAL STANDARDIZATION. As a result of the increased war activity of ASA, AIEE, ASTM, ASME, AISI, NEMA, etc., we have found it essential to revise our standards in line with the present-day standards and recommendations of these organizations. Since time is so important we have established short cuts whereby we can issue new or revised standards in as short a time as 24 hours. In some cases, because of the geographic location of the interested Works, it may take weeks to arrive at a composite Company standard. The urgent necessity for the rapid assembly, at a particular Works, of parts or sub-assemblies made at two or more Works, or by subcontractors, precludes any unwarranted delay in the issuance of a Company standard on the item in question. The prime requisite of any Standards Department is the ability to clear these bottle necks in the shortest possible time.

The substitution of readily available materials for scarce materials is another problem that has taxed the ingenuity of all concerned to the utmost. While this has involved the issuance of a large number of new and revised material specifications there has been an earnest endeavor to anticipate or exceed WPB conservation orders. Some of the substitutions in material have led to very gratifying results such as lower costs without impairment of essential physical characteristics. In other instances new techniques have been developed for handling different materials that may prove advantageous in the long run. Undoubtedly, there are a considerable number of cases where substitutions will work a hardship particularly in view of the fact that the increasing rate of armament production leaves little time for changing to new and untried materials on a large scale. Some substitutions will be permanent and in this respect, at least, we will gain from the present difficult situation.

Long association between engineering and manufacturing organizations brings about a mutual understanding as to what is intended or required on a specific design or operation. This so-called "Shop Practice" is something that has been with us, more or less satisfactorily, for a good many years. In normal times it has been considered, and probably justifiably so, a departmental problem. With the growing number of new, and largely untrained, personnel in both engineering and manufacturing organizations the understanding, if any, is far from being mutual. The only practical solution to this problem is to tie down a specific thing with a specific instruction or standard. American Standards developed

under ASA procedure offer a solution in many instances; in others, the answer is not specific enough and a great deal remains to be done from both a company and a national point of view.

The Standards Department personnel is in a position to be of considerable assistance to the engineering and manufacturing organizations because of their outside contacts. By virtue of their membership on ASA sectional and other committees they have an excellent opportunity to judge future trends, learn of improved materials, equipment, and technique, locate additional

sources of supply for material and parts, etc. Many of us engaged in standards work feel that the present war emergency is a golden opportunity to standardize a great many things that would normally go by the board. More standards mean less investment in materials, machines, and employee education, and most important now, greater war production. The military strength of the totalitarian powers is largely due to the exclusive production of standard types and sizes. They have handed American free enterprise a gauntlet that we dare not ignore.

## Canadians Study Use of "Wartime Brand"

**A** PLAN to distribute standardized products under a single label, with individual brand names eliminated for the duration, is being proposed in Canada as the next step in the Canadian control of prices and production. "Canada Wartime Brand" has been suggested as a possible label for the standardized models.

The question of eliminating brand names has been raised because the Canadian authorities have limited production on certain consumer goods to a few plants and have converted the remaining plants to the production of war supplies. Up to the present time the plants which are still permitted to produce for the consumer have been producing by agreement with the converted plants a certain proportion of their output for the brands of the converted plants. However, the plants which have been converted to war production have no control over the quality of the article which the nucleus manufacturers produce, though, by agreement, it carries their label. "Moreover," explains *Business Week*, May 30, "the public is likely to lose its respect for individual company brands when it knows—as all Canadians do—that all the products now are produced in one or two plants, and, in some cases, according to a single quality and pattern."

"If trade names are suspended," *Business Week* declares, "the standardized products will be distributed to the trade and ultimately to consumers under one label—such as Canada Wartime Brand. Trade names will be preserved during the period of suspension, and owners will resume the production of branded merchandise after the war when standardization ends and competition is resumed. Officials believe this plan will protect the interests of trade-name owners better than the use of the names on standardized articles with the production of which they now have no connection."

Canada has already made important reduction in designs and varieties of paper products; designs of prints and rayon fabrics have been cur-

tailed; the packaging of fish, tobacco, and other products has been standardized; and clothing economies have been made which are estimated to save enough cloth for one uniform for every member of Canada's armed forces, it is reported. In addition, designs of boilers and radiators have been reduced; as well as the number of sizes of bolts and screws, plumbing equipment, shipping cases, and farm machinery. Rubber footwear styles have been cut from 354 to 65, and full-fashioned hosiery from 40 to 4.

## Information On Emergency Steels Now Available to Industry

Technical information on the National Emergency Steels<sup>1</sup> is accumulating and is available to industry, it was announced recently by the Metallurgical Section, Iron and Steel Branch, and the Bureau of Industrial Conservation of the War Production Board, who are cooperating on the proposed new specifications.

Increasing use of the steels has made them more readily available at steel mills and warehouses and numerous tests have been made. In addition, steel companies have been making physical tests on the new steels as they are produced. Some of the tests have been made on single heats, but others have been made on several sizes and after various heat treatments.

To make the information available to industry, the Iron and Steel Institute has collected all existing data and published it in loose leaf form. Included are curves showing the hardenability characteristics of all NE steels and the mechanical properties of a number of the compositions. Present data will be supplemented from time to time as testing of the steels continues.

National emergency steels are made in accordance with new specifications designed to conserve scarce alloying elements.

<sup>1</sup>For a description of the work including a list of the National Emergency Steels see the *SAE Journal*, April.

# The ASA in the War Effort

## War-Time Methods of Work

THE American Standards Association was organized in 1918 as a result of production problems of the last war.

So large a part of the ASA's work is now on emergency problems that it has had to develop a war-time emergency procedure. This procedure will be more clearly understood if prefaced by a few words as to what the organization is and how it normally works.

### What the ASA Is and How It Works

The ASA is a federation of 77 national technical and trade associations and government departments.

The chief function of the ASA is to provide systematic means for establishing American Standards, 542 of which have already been developed. The typical method of accomplishing this is through "ASA Sectional Committees", each of which is a cross section of the groups substantially concerned with the particular subject in hand. More than 500 national organizations are represented on these sectional committees.

### Emergency War-Time Jobs

Under the emergency there are many standardization jobs that must be done in weeks or even days, which under normal conditions might require months or perhaps years to perfect and to get the concurrence of all interested groups.

Fortunately, the ASA set up a special emergency procedure in January, 1941, by which the development of such emergency standards can be greatly speeded up. Such standards are now called "American War Standards". They are issued in a special format, on yellow paper, so that they shall not be confused with the regular American Standards.

The most complete flexibility is provided so that almost any sort of a situation can be met, as may be seen from the examples outlined on page 169. An entirely new standard may be developed, as has been done, for example, in the case of standards for a photographic exposure guide and for the statistical control of quality in mass production.

On the other hand, an American War Standard may cover identically the same field as that of a regular American Standard. For example, when an emergency standard for gas ranges was developed and approved, and even when a War Production Board order limited production of ranges to those complying with the emergency standard,

the regular American Standard was not withdrawn. It is in abeyance for the "duration".

In fact, an American War Standard may consist merely of a single alternate provision for a clause in a regular American Standard—this alternate provision being used in cases in which materials called for in the regular standard are not available, but the regular standard being used in cases in which scarce materials are essential, and in which these materials are available through priorities. Similar flexible arrangements are being used by the Federal Specifications Executive Committee, and by the American Society for Testing Materials. (See the article on page 141 by C. L. Warwick.)

Requests for the development of American War Standards have been received from the War and Navy Departments, from the WPB and the OPA, and from industry.

Work on War Standards is usually handled by an emergency technical committee made up of key men intimately familiar with the particular subject in hand. Draft standards are submitted for criticism, under time limits, to key individuals in the groups concerned. The chairman of the ASA Standards Council<sup>1</sup> acts for the Association in the approval of emergency undertakings, in the appointment of committees, and in the final approval of the War Standards. In this he has the advice of the appropriate correlating committee. This whole emergency procedure is safeguarded by keeping the members of the Standards Council advised of each step in the development of the undertaking.

Whenever there is an existing sectional committee in the field of an emergency undertaking, it has been the policy to make the greatest possible use of the sectional committee consistent with speed. Usually, an existing or special subcommittee, often with one or more outside members, acts as the emergency committee. The other members of the sectional committee act as advisers.

It is provided that, after the war emergency shall have passed, all of these War Standards shall be reviewed, so that each may be approved, amended, or withdrawn, through the regular procedures of the Association.

In some twenty undertakings these emergency methods have worked smoothly and well. No im-

<sup>1</sup> The Standards Council, the body in charge of all technical work of the ASA, is made up of representatives of all the national organizations which are members of the American Standards Association.



portant controversy has arisen. All of the participating groups have shown a desire to put their shoulders to the wheel and to sink unimportant differences and commercial considerations which, in normal times, frequently led to long discussions and controversy.

There is rapidly increasing recognition of the importance of technical standards in all phases of

the war effort. Increasing use of the facilities of the ASA, and especially of the emergency methods, is being made by the Government, which has made more requests of the ASA since Pearl Harbor than in the previous ten years. Industry also is making increasing use of these facilities in the problems which it is meeting in all phases of its war work, such as sub-contracting, plant conversion, and the training of personnel.

## Direct Services to Industry in War-Time

**T**HE fundamental service of the American Standards Association to industry is the unifying and codifying of policies and practices into clear, simple standards which management can use. Further, it helps management in the technique of the effective use of standards.

Who uses the ASA? Manufacturers. Consumers. Government. For some 1,800 company members all over the country the American Standards Association provides a place to go for standards and for authoritative information about standards. It thus helps in solutions of manufacturing and purchasing problems.

For all of its members the Association provides certain direct services:

Its monthly publication, *INDUSTRIAL STANDARDIZATION*, brings to engineers and executives news of standardization activities in this country and abroad, and numerous articles on the practical application of standards in industry. As seen on page 179 of this issue the magazine covers Government standards activities, including news of emergency specifications issued by the Government and by technical bodies.

The ASA provides an Information Service and Reference Library for the use of members. The library contains 20,000 standards, books, and re-

lated documents, including a file of the national standards and purchase specifications of other countries. This library is the only place in the country where much of this information can be found.

The Association provides members with free copies of new American Standards.

Through its technical staff, through its library, through the pages of its magazine, through free copies of standards, and through correspondence, the American Standards Association keeps members abreast of the standards activities of Government and industry.

War production and the changes in industry resulting from it—conversion of factory facilities, getting into production with new products, training personnel, subcontracting—led to increased demands for services even in the days before Pearl Harbor. Since then these demands have doubled and tripled.

There have been many calls from firms breaking into the Latin American market.

The British Purchasing Commission is making extensive use of the ASA Library and Sales Department. It has also referred hundreds of inquiries to the ASA from firms in need of standards and specifications.

## Special War-Time Jobs

**M**OST of the work which the American Standards Association carries on in peace time was immediately available for the war effort. For example, the more than 80 mechanical standards for parts, tools, bolts, screws, bearings, drawings were ready for instant use. The 70 safety standards for the protection of workers from industrial accidents, the 70 electrical standards for motors, wires, and cables, insulators, switchgear, etc., were many of them already in wide use. However, there is not space enough in these pages to discuss the regular work.

Since the beginning of the emergency the American Standards Association has been asked to do 30 special jobs connected with the war effort. The following are typical:

**Accuracy of Engine Lathes (B5.16-1941)** — One

of the first emergency jobs to be completed and one that is being used widely by Government and industry in ordering machine tools, is a standard for Accuracy of Engine Lathes. It contains 25 accuracy tests for engine and toolroom lathes, one of the most important tools in war production. It was developed under the technical leadership of the National Machine Tool Builders' Association.

**Application of Statistical Methods to Quality Control of Materials and Manufactured Products (Z1)**—At the request of the War Department a large amount of work has been done in the field of quality control. The purpose is to speed up production and inspection of products by establishing a method of quality control which will spot trouble before it becomes bad enough to



## ASA Special War-Time Jobs

| Title   | Requested by  | Status   |
|---|---|--|
| A57 Building Code Requirements for Iron and Steel   | WPB—Specifications Branch                                       | Recommendations transmitted to WPB   |
| A85 Protective Lighting for Industrial Properties   | U.S. War Department and Insurance Committee on Plant Protection | Draft standard completed by committee for criticism  |
| B5.16-1941 Accuracy of Engine Lathes  | National Machine Tool Builders' Association                     | Standard issued and being used widely by industry and government in ordering machine tools                       |
| B38 Domestic Electric Refrigerators   | OPA   | Stopped when production ended  |
| C1 Interim Revision of National Electrical Code   | WPB—Industry Branch   | Interim revision of code developed and transmitted to WPB by ASA Committee                                       |
| C12 Code for Electricity Meters   | Edison Electric Institute                                       | Standard under development   |
| C70 Flat Irons  | OPA   | Stopped when production ended  |
| C74 Machine Tool Electrical Standards   | National Machine Tool Builders' Association, endorsed by WPB    | Standard issued and in use   |
| C75 Military Radio Equipment and Parts  | WPB—Radio and Radar Section                                     | 6 projects chosen for immediate consideration. Preliminary work done on 18 standards for moulded mica capacitors |
| L4 Specifications and Standards for Sheets and Sheeting   | OPA   | Draft used in Government order pegging price ceiling on sheets to standards of quality                           |
| L14 Color Fastness Terminology  | OPA   | Recommendations of ASA Committee transmitted to OPA and FTC which is preparing Trade Practice Rules              |
| Z1 Application of Statistical Methods to Quality Control of Materials and Manufactured Products | U.S. War Department   |  |
| Guide to Quality Control (Z1.1-1941)  |   | Standards issued and in use. Being promoted by Army Ordnance Department  |
| Control Chart Method of Analyzing Data (Z1.2-1941)  |   |  |
| Control Chart Method of Controlling Quality During Production (Z1.3-1942)                       |   | Standard in press  |
| Z21 Approval and Installation Requirements for Gas Burning Appliances                           | WPB—Industry Branch   |  |
| Gas Ranges (Z21.1ES-1942)   |   | Standard issued. Used in WPB Limitation Order L-23-c   |
| Gas Water Heaters (Z21.10WS)  |   | Approved standard now being issued   |
| Z32.3WS Graphical Symbols for Electrical Power Control Measurement                              | National Electrical Manufacturers Association                   | American Standard to be issued soon, emergency job unnecessary   |
| Z37 Allowable Concentrations of Toxic Dusts and Gases   | ASA Committee on Toxic Dusts and Gases                          |  |
| Cadmium (Z37.5-1941)  |   | Standard issued and in use   |
| Manganese (Z37.6)   |   | Standard submitted for approval  |
| Diethyl Ether (Z37 subs)  |   | Standard under development   |
| Xylol (Z37 sub)   |   | Standard under development   |
| Acetone, Azides (Lead and Sodium), Tetryl, TNT  |   | Discontinued. Insufficient data  |
| Z38.2.2-1942 Photographic Exposure Computer   | U.S. Navy   | Standard issued  |
| Z44 Specification and Description of Color  | General Electric Co. and Interchemical Co. and endorsed by WPB  | Standard to be issued soon   |
| Z45 Packages for Electronic Tubes   | WPB—Simplification Sec.   | Standard under development   |
| Washing Machines  | OPA   | Stopped when production ended  |
| Screw Threads for High Temperature Bolting  | WPB   | Request received   |
| Specifications for Protective Footwear  | WPB   | Request received   |

cause rejections. Three standards on the subject have been published and there will be at least one more. They enable the manufacturer to get more uniform quality of product, to reduce scrap to minimum, and to use inspection data more effectively. Also, they present the soundest basis for supplier-customer relations in respect to the quality of purchased product, and hence, are a valuable asset in relations between the government and contractors for war equipment orders, and also, between prime contractors and subcontractors. The War Department is making increased use of the standards and is setting up courses to train inspectors and additional personnel in the use of the method.<sup>1</sup>

**Approval and Installation Requirements for Gas Burning Appliances (Z21)**—At the request of the War Production Board an emergency modification of the peace-time standard for gas ranges has been completed and approved in record time. Use of this emergency specification will save an estimated 20 pounds of metal per range without in any way affecting the thermal efficiency, or the safety and economy of gas consumption. In fact, additional requirements somewhat increase the serviceability factor. Savings in metal are effected by eliminating chrome and bright trimming and using thinner metal parts. This will, in the committee's opinion, cut down some on the life of the range but not seriously. According to a WPB order no more ranges may be manufactured after July 31st, except in accordance with this standard.

Also at the request of the War Production Board, a second emergency modification of a peace-time standard has been prepared for Gas Water Heaters. This standard also has been completed and approved with record speed, and it is expected that this standard too may be embodied in a production limitation order of the WPB.

**Photographic Exposure Computer (Z28.2.2)**—A request from the U.S. Navy for a simple, inexpensive device for finding the correct photographic exposure for any time of day in any habitable part of the world, has resulted in the development of a photographic exposure computer. The job is completed and production is already underway of 5,000 copies for the U.S. Navy and approximately 10,000 for the U.S. Air Corps. Suitable for use in both aerial and ground photography, this exposure computer will be carried on all naval vessels and on all military planes photographically equipped. A peace-time edition is being released for civilian use.

**Allowable Concentrations of Toxic Dusts and Gases (Z37)**—To conserve manpower in war industries through prevention of occupational diseases, the ASA Committee on Toxic Dusts and Gases is working on standards to set safe limits for a number of toxic substances used widely in war production. A standard for cadmium has already been completed and is in use. Standards

for Ether, for Xylol, and for other substances are in the course of development. Work on several other substances has been discontinued because too few facts were known about the substance and its effect upon the health of workers to make a standardization job effective. Other work will be taken on in the place of these projects that have been discontinued.

**Safety Standards.**—By special request of the Federal Government the American Standards Association has printed a special edition of 8 basic Safety Standards which are being used as a required text in all safety engineering courses that are being given under government supervision.

**Protective Lighting for Industrial Properties (A85)**—The ASA is working at the request of the War Department and the Insurance Companies on standard methods of lighting industrial properties to protect them from theft and sabotage. The completed job will include the minimum amount of illumination required for various classes of boundaries, yards, open areas, storage spaces, vital structures, etc. An appendix will provide suggestions for obtaining these results through lamp sizes, mounting heights, spacing and types of lighting equipment.

**Radio Materials and Parts (C75)**—An extensive program of standards for materials and parts for military radio is actively underway. This job comes to the ASA at the request of the War Production Board, and is being carried on in intimate cooperation with the Army and Navy so as to bring about better standardization of quality and to eliminate differences between the Services' requirements. The cutting down on the varieties and the number of parts is especially important because of the pressure under which the manufacturers are working.

**Building Code Requirements for Structural Steel (A57)**—At the request of the War Production Board, the ASA Committee on Building Code Requirements drafted complete recommendations for building code provisions covering structural steel (bolted and welded) for buildings. These are now in the hands of the government and will probably be used by them as a war standard for the duration. The purpose of this work is to conserve steel, especially in emergency building. The job was completed within 23 days of receiving the WPB request.

**Specifications and Standards for Sheets and Sheeting (L4)**—While not yet approved as a standard by the ASA, the specifications for sheets and sheeting under development in an ASA committee have been used by the OPA in its recent price order PM2391. This order sets a price ceiling on sheets and sheeting which is tied to specifications for quality. This is the first of these Government orders that has pegged price to quality, thus protecting the consumer in the face of rising labor costs and shortages of raw materials.

<sup>1</sup> See General Somers' article, page 155.

# Army and Navy Will Use New Standard Computer For Picture Exposures

by E. M. Russell<sup>1</sup>

Chairman, ASA Emergency Technical  
Committee on Photographic Exposure Computers

EARLY this year the ASA committee on photographic standardization (Z38) received a request from the U. S. Navy. The Navy wanted a simple computer incorporating reliable data covering a wide range of light and scene conditions for military use in determining proper photographic exposure. As a result, the American Standards Association is this month issuing as an American Emergency Standard the completed *Photographic Exposure Computer*, which may be put into immediate use by photographers of the U. S. Navy, the U. S. Army Air Corps, and the U. S. Army Signal Corps in any part of the world.

Although the Computer in its present printing is intended primarily for use by the military forces, copies may be purchased from the ASA office.

To make the Computer as convenient as possible to use, it has been printed in a pocket size, approximately  $3\frac{1}{4}$  inches by 5 inches. The edition for the Army and Navy will be made of special materials in order to withstand the rigors of military service. The civilian edition, however, although carrying the same information, will have pages and covers of different materials because of lack of necessary priorities.

In working out the Exposure Computer, the aim of the Emergency Technical Committee was to develop a means of determining satisfactory exposure for a variety of light and subject conditions, using different types of film. The photographer must be given some simple but accurate method of estimating the various factors which enter into taking a picture, and from these estimates or indexes of deriving an exposure time and camera lens aperture which will result in a good photographic negative.

In determining the exposure time and camera lens aperture necessary for satisfactory photo-

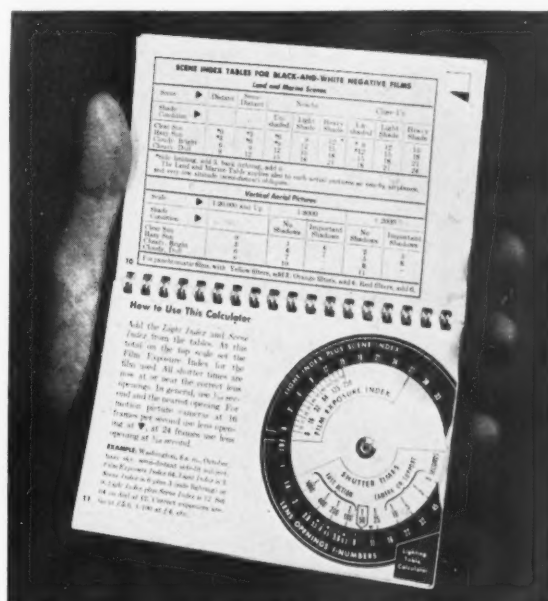
graphic exposure, the principal factors which must be considered are: Latitude, time of day and month, illumination conditions (general and local), type of subject or scene, characteristics of the film used, and type of negative desired.

The Technical Committee compiled data for all these factors and combined them in such a manner that the photographer concerns himself with only three values:

Light Index  
Scene Index  
Film Exposure Index

## A. Light Index

The Light Index indicates the amount of light available at any point on the earth's surface for



The Exposure Computer

<sup>1</sup> Eastman Kodak Company.

a given month and hour, disregarding clouds, haze, local shading, etc. The proper value is determined from a series of tables in the Computer, covering all latitudes, for all months of the year, and all hours of the day. The data for these tables were compiled from observations made by the Smithsonian Institute and the U. S. Weather Bureau over a period of many years.

## B. Scene Index

The Scene Index indicates the effect on exposure of clouds, haze, shade, and scene structure. A table gives index values for scenes at different distances (distant, semi-distant, nearby, close-up); under a variety of conditions of shade (unshaded, light shade, heavy shade), and under different cloud conditions (clear sun, hazy sun, cloudy

bright, cloudy dull). The data were compiled from reliable photographic publications.

The Light Index and Scene Index values are logarithmic, and can therefore be added. An increase of 3 in these values (e.g., from 6 to 9) indicates that the exposure should be doubled.

## C. Film Exposure Index

This Index is based upon the photographic exposure which a particular film should receive in order to produce negatives of good quality. Values for this Index are not included in the standard but are to be supplied by the manufacturer of photographic materials.

## Operation

For use in conjunction with the tables, the Computer includes a movable dial calculator. In actual operation, the Light Index (A) is added to the Scene Index (B). The sum of these values is set on the calculator dial opposite the Film Exposure Index (C). The proper lens opening and exposure time are then read directly from the dial.

## Discussion

In addition to the tabular data, the Computer includes brief discussions of the significance of each of the items involved, indicating the theory behind the work.

## Appendix

Supplementing the above tables, which are designed to give the photographer satisfactory results under normal conditions, there is included an Appendix, in which numerous suggestions are made to help in obtaining usable negatives under various *abnormal* conditions, such as: Interiors or very dim exteriors, electrically-lighted interiors, dawn and dusk, smoke, snow, extreme close-ups, copying. Short tables for photoflash and photo-flood photography are also included.

## ASTM Plans Annual Meeting June 22 Through June 26

More than 100 technical papers and reports are scheduled for presentation at the Forty-fifth Annual Meeting of the American Society for Testing Materials to be held at Chalfonte-Haddon Hall, Atlantic City, from Monday, June 22, through Friday, June 26. During this week there will be also more than 150 meetings of technical committees.

This year, 1942, is the "Book of Standards year" for the Society and therefore, the committee reports will be of more than usual significance. Each group will attempt to have its specifications as up-to-date as possible for inclusion in the triennially published Book, scheduled for publication late in November.

An Emergency Technical Committee, made up of members of the ASA Subcommittee on Sensitivity to Radiant Energy and representatives of the Army and Navy, prepared the American Emergency Standard Photographic Exposure Computer. Members of this technical committee are:

M. E. Russell, Eastman Kodak Company, *Chairman*.

Paul Arnold, Agfa Ansco Corporation, Binghamton, N. Y.

Walter Clark, Eastman Kodak Company, Rochester, N. Y.

Raymond Davis, National Bureau of Standards, Washington, D. C.

W. N. Goodwin, Jr., Weston Electrical Instrument Corp., Newark, N. J.

F. K. McCune, General Electric Company, Lynn, Mass.

Brian O'Brien, University of Rochester, Rochester, N. Y.

R. S. Potter, Defender Photo Supply Company, Rochester, N. Y.

E. D. Tillyer, American Optical Company, Southbridge, Mass.

D. R. White, du Pont Film Manufacturing Corp., Parlin, N. J.

Hans Dessauer, The Haloid Company, Rochester, N. Y.

Joseph M. Bing, Photoutilities, New York, N. Y.

Lieut. A. D. Fraser, Photographic Section, Bureau of Aeronautics, U. S. Navy.

George Magnus, U. S. Army Air Corps.

R. F. Nicholson, U. S. Army Signal Corps.

L. A. Jones, chairman, ASA Sectional Committee on Standardization in the Field of Photography (Z38).

Copies of the civilian edition of the Photographic Exposure Computer are now available from the American Standards Association at \$1.00 per copy.



## New Foreign Standards Received by ASA Library

The following new and revised standards have just been received by the American Standards Association, and may be borrowed by ASA Members or ordered from the ASA Library. They are published in the language of the country in which they were developed.

### Argentina

The following standards are printed (as indicated) in recent issues of "Informaciones", the magazine of the national standardizing body of Argentina. One copy only of each issue is on file in the ASA Library, and may be consulted there.

Acero Laminado, en Barras, para Roblones IRAM 505-P (Dec)  
Ensayo de Roblones IRAM 506-P (Feb)  
Toluol IRAM 1017-P (Dec)  
Xilol IRAM 1018-P (Jan)  
Lamparas Electricas de Filamento de Tungsteno para Usos Generales IRAM 2009-P (Jan)  
Simbolos Graficos Electrotecnicos para Instalaciones de Alumbrado, Calefaccion y Fuerza Motriz IRAM 2010-P (in part) (Dec, Jan, Feb)  
Tubos de Acero para Calderas: sin Costura, Laminados en Caliente IRAM 2508-P (Feb)  
Complete listing of IRAM standards, as of February 1942, is also on file, with mention of the issue in which they first appeared.

### Australia

Complete list of Australian Standards as of January 1942  
Carbon Steel Castings, Specification for No. B.27-1942  
General Grey Iron Castings (Grades A and C), Specification for No. B.26-1942

### Canada

CESA Standard Specification for Concrete and Reinforced Concrete 2nd ed A23-1942 \$1.00  
Canadian Electrical Code, Part II—Construction and Test of:  
Electrical Equipment for Oil-Burning Apparatus 2nd ed C22.2—No. 3-1942 50¢  
Heating and Heater Elements—Replacement Types C22.2—No. 72-1942 50¢

### Great Britain

Aircraft Materials and Components  
"Not Go" Gauges and "Go" Calliper Gauges for Ser-rations A.19—Part 2  
Flexible Cables for Power and Control Circuits of Electric Lifts No.977-1941  
Cast Iron, Data on No.991-1941  
Gas Producers, Test Code No.995-1942  
Drying Ovens, Test Codes for Performance of; Fuel-fired Bakers' Ovens, Commercial Acceptance Tests No.996-1942  
Crude Sperm Oil No.997-1941  
Pure Vacuum Salt for Dairy Purposes No.998-1941  
Die Castings: High Purity Zinc and Zinc Alloys Nos. 1003, 1004-1942

#### Revised British Standards

##### Railway Rolling Stock Materials:

Locomotive, Carriage and Wagon Axles (superseding 24,—part 1-1928) 24,—part 1-1941  
Locomotive, Carriage and Wagon Tires, including Standard Methods of Fastening Locomotive Tires (superseding 24,—part 2-1928) 24,—part 2-1942

Springs and Spring Steel (superseding 24,—part 3-1932) 24,—part 3-1942  
Steel Forgings, Blooms and Castings (superseding 24,—part 4-1930) 24,—part 4-1941  
Steel Plates, Sections, Bars and Rivets for Locomotive Boilers, Locomotives, Carriages and Wagons (superseding 24,—part 6-1929 and 24—spec 16X-1940) 24,—part 6-1942  
Ceiling-Type Electric Fans and Speed Regulators for use therewith, Performance Test (superseding 367-1932) No.367-1941  
Electric Arc Welding Plant and Equipment (superseding 638-1935) No.638-1941  
Ferrous Pipes and Piping Installations for and in connection with Land Boilers (superseding 806-1938) No.806-1942

#### British War Emergency Standards

Metal Windows and Doors No.990-1941  
Schedule of Drums and Sheet Steel Containers for British Packers in the United Kingdom for the Home Trade No.993-1941  
Centrifugal and Axial Flow Pump—Specifications and Data required for Estimates and Orders No.994-1941  
High Tensile Brass Bars and Sections (suitable for forging) and Forgings (also suitable for soldering); High Tensile Brass Bars and Sections (suitable for forging) and Forgings (not suitable for soldering) Nos.1001, 1002-1941

#### British Revised War Emergency Standards

Schedule of Sizes of Tins and Cans for British Packers in the United Kingdom for the Home Trade (superseding rev of April 1941) 866(2R)—parts 1 and 2-1940

### New Zealand

School Paper Stationery, Specification for; with War Emergency Amendment NZSS 362

#### New Zealand War Emergency Standards

Standard Code for Raid Shelter NZSS/E28  
Code of Practice for Protection against Flying Glass NZSS/E33

## Interim Revision to Electrical Code Will Conserve Copper and Rubber

The chairman of the Sectional Committee on the National Electrical Code, sponsored by the National Fire Protection Association, announces adoption by the committee under the tentative interim amendment procedure of the following note to be inserted following Section 3004 of the 1940 edition of the National Electrical Code:

"Note: For the duration of the defense emergency and to assist in the conservation of copper and rubber, conductors having Code grade rubber insulation that are not operated continuously with maximum currents may have the allowable current-carrying ratings that were given them in Table I of the 1937 edition of this Code and the limits of allowable current because of more than three conductors in a raceway (Note 5, page 303, 1940 text) and because of room temperature being over 30 C (Table I, page 301, 1940 text) need not be applied."

# "Utility" Gas Range Is Ordered by WPB To Meet American Emergency Standards

by R. M. Conner

*Director, AGA Testing Laboratories;  
Chairman, ASA Emergency Technical Committee  
on Gas-Burning Appliances*

WPB Order L-23-c, which limits the amount of strategic metals that can be used in domestic cooking appliances, gives both the war production program and the consumer the benefit of the years of experience gained in developing standards by the ASA Sectional Committee on Gas-Burning Appliances, Z21, AGA Approval Requirements Committee. To prevent quality deterioration under war-time conditions and to guard the customer's interest by setting standards for safe and efficient operation of the gas ranges manufactured under the conservation program, the Limitation Order states: "Permit-

Through use of the new "utility" model gas range provided for in the American Emergency Standard Approval Requirements for Domestic Gas Ranges, and through total cuts in the manufacture of ranges and other heating appliances, the War Production Board expects to save some 350,000 tons of iron and steel this next year. The government order will also cut inventories by limiting each gas appliance manufacturer who is allowed to continue in operation to production of one model. It has been estimated that 92 companies out of a total of 245 affected by the order will be required to discontinue stove manufacture after July 31. Those companies to be allowed to continue making gas ranges are the medium size manufacturers located outside of certain defined labor-shortage areas.

This "utility" range is one of the first examples of a much discussed way of saving materials and at the same time safeguarding quality; namely, to limit production to stripped "utility" models and at the same time set standards of minimum performance. This method usually requires little or no conversion of plant.

A second way which is often proposed is to require all manufacturers in the field to make an identical unified product—sometimes called a "Victory" model.

ted Type Gas Ranges must be manufactured so as to comply with the requirements for performance, safe operation, and substantial and durable construction as set forth in the American Emergency Standard Approval Requirements for Domestic Gas Ranges, Z21.1 ES-1942."

This American Emergency Standard has just been completed at the request of the WPB. Designed for war-time use, it is stripped largely of non-essentials which require additional metal or other scarce materials. The cooking performance of the new "utility" model, which will be manufactured to meet its provisions, remains unimpaired, however, as do safety and economy of gas consumption.

Formulated essentially for the purpose of reducing to a minimum the amount of critical materials used in construction of a range, the major differences between the peacetime and the emergency standards are in constructional features. For example, a reduction of approximately two gage sizes from present required thicknesses of sheet metal parts is now permitted. Strength tests are proportionately reduced. However, the modern art of construction has advanced to the stage where, despite reduced thicknesses of metal, approximately the same durability and rigidity can be maintained.

## Four-Burner Range Weighs 100 lbs.

While no limitation was set on dimensions, the emergency requirements are written around a cooker type range embodying four top burners and a combination oven and broiler burner serving both oven and broiler compartments. No provisions are made for utility compartments or utensil drawers. Although maximum weight is not specified, the total weight of a unit complying with these requirements will be approximately 100 pounds. Not more than four ounces of copper or copper alloys will be needed for each range, this including the amount needed for a heat control when furnished.

It is apparent that these changes hold the use of critical materials as much as possible to an absolute minimum. Furthermore, in place of a

minimum of two oven racks, only one is required (two are specified for test purposes only). As manufacturers were requested by the War Production Board to eliminate top burner covers from all new models, no provisions for covers are made in these requirements.

Any constructional requirements which appear in the current edition of the American Standard but which do not apply to the cooker type range described above have been omitted in the emergency standard. All constructional provisions required for safety of operation, however, have been retained. In formulating the new emergency standards a number of constructional revisions were taken from the proposed revisions now being edited for the tenth edition of the American Standard. Among these changes are additional requirements which increase the serviceability factor, such as accessibility of accessories for adjustment.

### Safety Requirements Stand

It is important to emphasize that where safety was concerned no changes were made from current American Standard requirements for the new emergency standard. As a matter of fact, performance features were, with only one exception, retained or strengthened in line with proposed revisions for the tenth edition of the current domestic gas range requirements. Flexibility of performance of oven thermostats constitutes the single exception. This was modified to permit use of cast iron rather than brass or copper construction. The change, however, does not

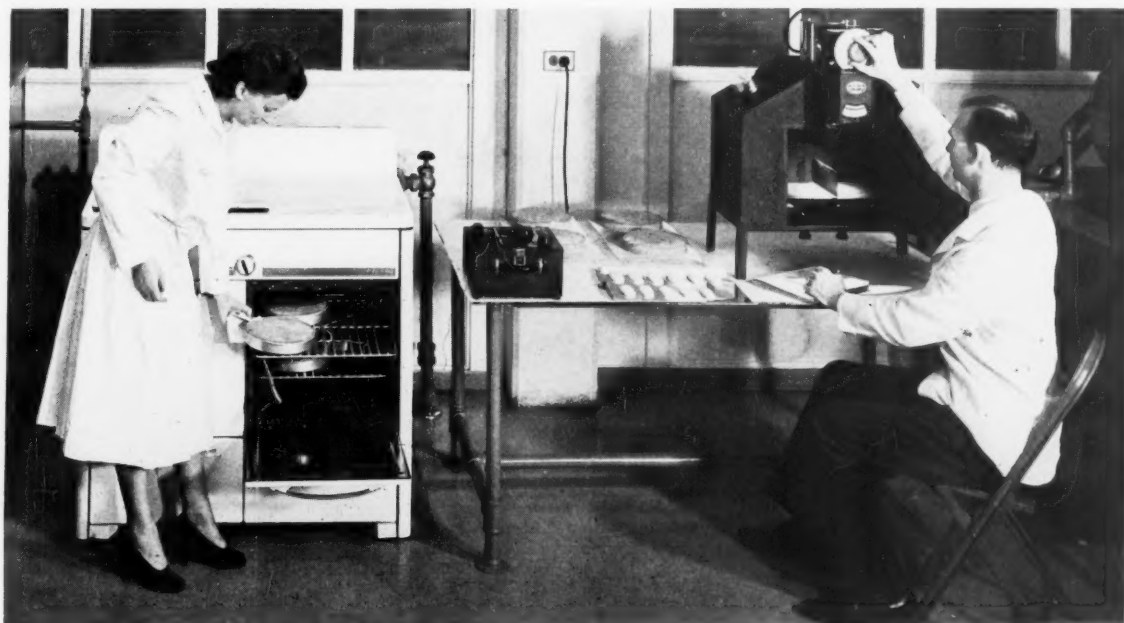
in any way affect safety or efficiency of performance.

The newly developed oven baking test which calls for simultaneous baking of four layer cakes, and which is being included in the new edition of the American Standard, was also included in the emergency standard in addition to the cooky test previously developed. The baking test now specifies the use of a photoelectric reflectometer for judging the color of baked products against a known standard, thereby eliminating the human equation.

### Must Show Approval Label

All gas appliances complying with applicable American Standard approval requirements may be identified by their mandatory display of the American Gas Association's Laboratories Approval Seal. Gas ranges complying with the new emergency standard are also required to display this trade-marked emblem. In order, however, to indicate clearly that they have been constructed under war emergency conditions they are further required to bear the statement: "Approved under War Emergency Requirements." This must appear in permanent form adjacent to the Seal.

The standardization program for gas-burning appliances, which formed the basis for the new Emergency Standard, was started in 1925, and has been carried out under the procedure of the American Standards Association, and conducted through the American Gas Association Testing Laboratories. Since 1925 public acceptance of this peacetime development has constantly grown,



Four cakes are baked in the new oven tests included in the American Emergency Standard for gas ranges. An electric reflectometer (shown at the right) helps in judging the cakes and cookies baked in the tests

and today more than 95 per cent of all gas appliances offered for sale in the United States and Canada display the Laboratories' Approval Seal as evidence of compliance with American Standards. More than 200 municipalities now have ordinances requiring that gas appliances installed within their limits must comply with provisions of these standards. In addition, practically every federal agency, such as the Veterans Administration, Federal Housing Administration, and War Production Board likewise require tested and approved appliances.

At the time our country entered the war, the effectiveness of this program was reflected in the fact that a wide variety of certified equipment was available for army camps, defense housing, and similar projects, as well as for normal civilian uses.

As shortage of critical materials increased, however, it became apparent that those materials normally used in the fabrication of gas-burning appliances must be conserved for essential war needs. As a result, the War Production Board, through its Industry Operations Division, gave attention to the possibility of achieving this conservation through the modification of gas appliances. It therefore enlisted the cooperation of the gas industry in streamlining present requirements on a war emergency basis, with the distinct understanding that all safety features would be retained unchanged and only those modifications would be made which would work toward the conservation of critical materials. This WPB request was particularly directed toward requirements for gas ranges in view of the large demand for such equipment, particularly in defense housing projects.

Assurance was given by the industry that prompt steps would be initiated to prepare the emergency standards desired. Action had previously been taken by the ASA Sectional Com-

mittee, Z21, AGA Approval Requirements Committee, through the appointment of a "Special Subcommittee on Emergency Modification of Requirements," to meet emergencies which it was anticipated would arise. Authority had been delegated to this group to handle emergency problems of this sort. The fact that this committee had already been appointed thus made available the necessary means for prompt development of emergency requirements. In addition, previous action by the American Standards Association had provided for accelerated approval of emergency requirements.

Through the Special Subcommittee on Emergency Modification of Requirements, proposed emergency standards for gas ranges were formulated and approved by the ASA sectional committee on gas-burning appliances within less than a month following the request from the War Production Board. Sponsored by the American Gas Association, and with the cooperation of the Standards Council of the American Standards Association, they were approved in April as "American Emergency Standard Approval Requirements for Domestic Gas Ranges," Z21.1 ES-1942. They make available the first emergency standards for such equipment.

These new standards will remain in effect for the duration of the emergency. From their description it is apparent that no compromise has been made in either the safety or efficiency of gas ranges to be constructed during the war period. As required in WPB Order L-23-c these American Emergency Requirements will govern the construction of ranges manufactured during that time for both defense housing and civilian purposes. In this way the same high level of cooking performance brought about by many years of standardization and testing activities on the part of the gas industry will continue to be assured to the country's millions of gas consumers.

## ASTM Produces Standards to Check Appearance of Cotton Yarn

Cotton Yarn Appearance Standards, consisting of photographs representing four grades each of five groups of yarn numbers, are now being produced by the American Society for Testing Materials and may be obtained from that organization. The standards were developed jointly by the American Society for Testing Materials and the Agricultural Marketing Administration of the U. S. Department of Agriculture. They were formerly available from the Department of Agriculture but the Society has now been asked to reproduce the charts and market them.

The Appearance Standards, a set of which consists of twenty 5½ by 10-in. photographs, are to be used in a revision of the ASTM Standard on

General Methods of Testing and Tolerances for Cotton Yarns (D 180). The standards for the four grades in each of the five groups of yarn numbers are mounted on a board 27½ by 15 in. The grouping of yarn numbers covered by the five boards is as follows:

|                 |                |
|-----------------|----------------|
| 3.0s to 7.0s    | 16.5s to 32.0s |
| 7.0s to 16.5s   | 32.0s to 65.0s |
| 65.0s to 125.0s |                |

These Cotton Yarn Appearance Standards may be secured from the ASTM, 260 South Broad Street, Philadelphia, at \$10 per set. Standards for single groups are available at \$2.50 per board.



## Many WPB and OPA Orders Are Based on Standards

**S**TANDARDS and specifications are becoming increasingly important in orders of the War Production Board and the Office of Price Administration. Some of the recent orders which refer to standards, which include required specifications, or which require compliance with existing specifications, are given below:

### War Production Board

**Asbestos (Conservation Order M-79)**—Prohibits installation of 85 per cent magnesia or other high-temperature pipe covering except (1) in installations where temperatures of 200 F or over occur or (2) in installations on ships.

**Canned Foods (Supplementary Order M-86-a as amended May 25, 1942)**—Specifies preferences as to grades and sizes of can for each type of canned fruit and vegetable for that part of the pack set aside for Government agencies.

**(Amendment I to Supplementary Order M-86-a)**—Gives specifications for weight, thickness of board, and minimum bursting strength for packing boxes for canned foods, including weather-proof solid fiber boxes, wirebound wood boxes, and nailed wooden boxes.

**Domestic Cooking Appliances (Supplementary General Limitation Order L-23-c)**—Limits production to selected smaller companies and provides that Permitted Type Gas Ranges must "comply with the requirements for performance, safe operation, and substantial and durable construction as set forth in the American Emergency Standard Approval Requirements for Domestic Gas Ranges Z21.ES-1942."

**Construction Lumber (Limitation Order L-121)**—Prohibits the sale of "construction lumber" as defined by grades and sizes.

**Feeding Nipples (Supplementary Order M-15-b-1, Amendment 5)**—Gives specifications for weight of rubber used in manufacture.

**Feminine Apparel for Outer Wear and Certain Other Garments (Limitation Order L-85)**—Specifies length and sweep measurements for Misses', Women's, Junior Miss sizes, and for Children's, Girls', Girls' Stout, Teen Age, and Teen Age Stout Sizes. Covers slacks, ski and snow pants, blouses, and dresses, coats and capes.

**Feminine Lingerie and Certain Other Garments (Limitation Order L-116)**—Establishes maximum measurements for sweep, length, and hem of nightgowns, slips and petticoats, and sleeping pajamas, in women's, junior, children's, and girl's sizes.

**Feminine Lounging Wear and Certain Other Garments (Limitation Order L-118)**—Includes maximum measurements for length, sweep, and hem for women's and children's robes, bathrobes, negligees and housecoats, and lounging pajamas.

**Fire Protective Equipment (Limitation Order L-39)**—Permits manufacture of carbon dioxide extinguishers in accordance with established specifications of the armed services and the Maritime Commission.

**Glass Container and Closure Simplification (Limitation Order L-103)**—States: "The Director of Industry Operations may from time to time issue Schedules establishing simplified practices with respect to designs, weights, sizes, or types of glass containers and closures." Includes simplified practices: Schedule A, Distilled Spirits; Schedule B, Malt Beverages. Also includes drawings showing sizes and shapes.

**Instruments, Valves, and Regulators Used in Industrial Process (Conservation Order L-134)**—Outlines operating conditions and specifications for instrument ends, instrument connections, and industrial instruments containing instrument ends or connections, as well as for safety valves, control valves, and regulators.

**Plumbing and Heating Simplification (Limitation Order L-42)**

**Schedule II, Pipe Fittings**—Lists sizes and standards permitted for production of grey cast iron, malleable iron, and brass or bronze pipe fittings. (Based on American Standards for pipe flanges and fittings.)

**Schedule III, Low Pressure Heating Boilers**—Eliminates metal jackets, fusible plugs, tri-cocks (compression cocks).

**Schedule IV, Cast Iron Soil Pipe and Fittings**—Lists weights and sizes at which cast-iron soil pipe and fittings may be produced. Permits "standard" or "medium" weights but discontinues brass pipe plugs and brass trap screws on cleanouts, ferrules, traps, test tees, and other soil pipe fittings.

**Schedule V, Fittings and Trim**—Prohibits use of copper, copper base alloy or die-cast zinc except in specified types of fittings and trim, and in specified sizes. Requirements for Flush-o-meters refer to Federal Specifications WW-P-541a. Drinking Fountains are to be made according to the minimum requirements of the U.S. Public Health Service (approved as American Standard by the ASA). Amended by Schedule V-a.

**Schedule VI, Cast-Iron Tubular Radiators**—Types, height and weight are specified.

**Schedule VII, Hot Water Heaters and Piping Systems**—Eliminates the use of copper or copper base alloy.

**Schedule VIII, Vapor and Vacuum Heating Specialties**—Defines permitted sizes and types.

**Schedule IX, Direct Fired Gas Storage Water Heaters**—Establishes sizes and eliminates metal jackets, brass draw-off cocks, and models requiring more than one heat flue.

**Schedule X, Electric Sump Pumps and Electric Cellar Drainers**—Establishes limitations on the use of brass or copper tubing except as required by specifications of the Army or Navy, the U.S. Maritime Commission, or the U.S. Coast Guard.

**Rubber Products and Materials of which Rubber Is a Component (Amendment to Supplementary Order M-15-b-1)**—Amends specifications to prohibit use of rubber, latex, or reclaimed and scrap rubber as insulation on the neutral wire of a grounded neutral system.

#### Office of Price Administration

**Bolts, Nuts, Screws, and Rivets (Maximum Price Regulation 147)**—Lists schedules of sizes for which prices are established, the sizes being selected from sizes established in American Standards for bolts, nuts, screws, and rivets. States: "The following types and sizes of bolts, nuts, screws, and/or rivets are assumed to be manufactured to either American Standards Association's specifications or United States Department of Commerce National Bureau of Standards Handbook H28 or British Standards Association's specifications, all as in effect on the effective date of this Maximum Price Regulation 147."

**Bituminous Coal (Maximum Price Regulation 120)**—Classifications, size groups, etc., are defined as those established by the Bituminous Coal Division.

**Copper and Copper Alloy Scrap (Amendment No. 3 to Revised Price Schedule No. 20<sup>1</sup>)**—Lists grades of scrap covered and includes specifications for certain grades.

**Cotton Textiles (Amendment 5 to Revised Price Schedule 81<sup>1</sup>, Bed Linens)**—Provides that bed linens shall carry a label stating type and size; if it is a "second," including a statement to that effect; and if it does not meet the specifications included in the Schedule carrying the term "sub-standard." Provides that Federal Test Method CCC-T-191A shall be used to determine whether linens meet the specifications. Gives minimum

specifications for thread count, weight, tensile strength, selvage, plain hems, stitches per inch, and added sizing.

**Iron and Steel Scrap (Amendment 5 to Revised Price Schedule 4<sup>1</sup>)**—Defines No. 1 heavy melting steel, and No. 2 heavy melting steel.

**Lumber, Southern Hardwood (Amendment 3 to Revised Price Schedule 97<sup>1</sup>)**—Defines "non-standard grades" in the terms of the grading rules of the National Hardwood Lumber Association.

**Newsprint Paper (Maximum Price Regulation 130)**—Defines standard newsprint paper, and includes specifications as to weight, rolls, sheets, stock, finish, ash content, degree of sizing, color and thickness.

**Cotton Products (Amendment 3 to Maximum Price Regulation 118)**—Defines types, constructions, and grades of cotton products for which maximum prices are listed.

**Used Household Mechanical Refrigerators (Maximum Price Regulation 139)**—Outlines specifications to be met by used refrigerators in various classifications: "as is"; "unreconditioned"; "reconditioned." "Reconditioned" refrigerators must be able to maintain an interior cabinet temperature of 45 F for a period of 24 hours when placed in a room in which the temperature is 90 F.

### Standard British-American Practice Would Prevent Confusion on Dates

The different methods followed by the British and Americans when figures are used in writing dates causes a great deal of confusion and may have serious consequences, especially since figures are generally used to express the date in tabular matter, the British Standards Institution reports.

British and European practice generally is to place the day's date first, followed by the month and the year, whereas American practice places the date of the month first, followed by the day

and the year. For example, if a British writer expressed May 7, 1942 in figures the date would appear 7-5-42. The same date written in figures by an American would, however, be 5-7-42. In the present emergency situation where time is of great importance, this difference in expressing the date may lead to serious errors.

Both the British Standards Institution and the American Standards Association urge that the name of the month be spelled out in all cases in order that misunderstandings may be avoided.

# Standards Issued by Associations and Government

(See "ASA Standards Activities", page 182, for new American Standards and progress on ASA projects)

For the information of ASA Members, the American Standards Association gives here a list of the standards received during the past month by the ASA Library for its classified files. With the increasing amount of material being received it has been decided to eliminate from the monthly list a few of those standards which may not be so important to ASA Members, such as Federal Specifications for foods. The list below therefore,

includes only those standards which the American Standards Association believes will be of greatest interest to Members in connection with their war production.

The standards listed may be consulted by ASA Members at the ASA Library, or copies may be obtained from the organization issuing the standard. Addresses of these organizations are given for your convenience.

## Associations and Technical Societies

**American Iron and Steel Institute (350 Fifth Avenue, New York, N. Y.)**

Carbon Steel Semifinished Products—Section 2 of Steel Products Manual Revised May 1942 25¢

**American Petroleum Institute—Department of Accident Prevention (50 West 50th Street, New York, N. Y.)**

API Accident-Prevention Manual on Organization for Accident Preventions No. 4, April 1942 25¢

Annual Summary of Injuries in the Petroleum Industry for 1941 April 1942

**American Trucking Associations, Inc. (Washington, D. C.)**

Record of Action on Major State Legislation Affecting Motor Transportation in 1941

**Association of American Railroads—Operations and Maintenance Department, Engineering Division, Signal Section (30 Vesey Street, New York, N. Y.)**

Signal Section Manual—1941 Additions and Revisions

**National Aircraft Standards Committee (care of Aeronautical Chamber of Commerce of America, Washington, D. C.)**

List of Aircraft Standards, as of March 30, 1942  
(Note: List only is on file for reference. Consult NASC regarding copies of standards.)

**Underwriters' Laboratories, Inc. (161 Sixth Avenue, New York, N. Y.)**

Electrical Metallic Tubing April 1942

## United States Government

**National Bureau of Standards (Washington, D. C.)**

(Copies Available from Superintendent of Documents, Government Printing Office, Washington, D. C.)

Building Materials and Structures—Performance Test of Floor Coverings for Use in Low-Cost Housing: Part 4 Report BMS80 March 1942 15¢

Glass Volumetric Apparatus, Testing of (supersedes C9) Circular C434 Dec 1941 10¢

Air Raid Warnings, Devices for Letter Circular LC-685 Apr 1942

Incandescent Electric Lamps: Photometric Standards Distributed by NBS (supersedes LC-220) Letter Circular LC-680 Feb 1942

Weights and Measures: Units and Systems: General Tables Letter Circulars 681 and 682 Mar 1942

### Commercial Standards

**Circulated to Industry**

Plywood (Hardwood and Eastern Red Cedar) Recommended revision of CS35-31

Vitreous China Plumbing Fixtures Recommended revision of CS20-36

**Commercial Standards (Continued)**

**Approved by Industry**

Dress Patterns, 3rd ed CS13-42 Effective Aug 20, 1942

### Simplified Practice Recommendations

**In Print (Copies available from Superintendent of Documents, Government Printing Office, Washington, D. C.)**

Food Trays, or Dishes (Waxed Paper, Molded Wood Pulp, and Wood Types) R187-42 Effective Apr 1, 1942 5¢

**Federal Specifications Executive Committee (U. S. Treasury Department, Washington, D. C.)**  
**Federal Specifications**

(Copies Available from Superintendent of Documents, Government Printing Office, Washington, D. C.)

The date after the title of the specification indicates when it becomes effective.

Aluminum-Pigment: powder and paste, (for) paint (superseding TT-A-468) TT-A-468 Aug 15, 1942

Bowls; wood (Amendment 1) LLL-B-621 Aug 1, 1942  
Brushes, Dust; counter (Amendment 1) H-B-201a July 15, 1942

Calcium-Chloride (for road and building construction) (new) C-C-106 Aug 15, 1942  
 Crushed-Stone, Crushed-Slag and Gravel; (for) sewage-trickling-filter-media (new) SS-C-744 Aug 15, 1942  
 Grease; lubricating, graphite (superseding VV-G-671) VV-G-671a Aug 15, 1942  
 Ink; writing (Amendment 3) superseding Amend. 2, 10/15/41) TT-I-563a July 1, 1942  
 Iron; pig, foundry (superseding QQ-I-676) QQ-I-676a July 1, 1942  
 Oil, Castor; technical-grade (new) JJJ-O-318 Aug 15 1942  
 Oil; typewriter (new) VV-O-836 Aug 15, 1942  
 Solder; tin-lead (superseding QQ-S-571) QQ-S-571a July 1, 1942  
 Ultramarine-Blue; dry, paste-in-japan, paste-in-oil (superseding TT-U-451) TT-U-451a July 1, 1942  
 Urinometers; Squibb (new) GG-U-681 Aug 15, 1942  
 Wax; paraffin (new) VV-P-121 Aug 15, 1942

### Emergency Alternate Federal Specifications

(Prepared in collaboration with the War Production Board)

Aprons; leather, blacksmiths' E-KK-A-606 Apr 25, 1942  
 Bags; hand, leather E-KK-B-50 Apr 25, 1942  
 Brushes, Dust; painters', round E-H-B-216 May 6, 1942  
 Brushes; sweeping, floor, hair (superseding E-H-B-651, 2/17/42) E-H-B-651 Apr 25, 1942  
 Cans; tinned-plate, friction-covers (superseding E-RR-C-96, 1/14/42) E-RR-C-96 Apr 30, 1942  
 Cases; brief, leather E-KK-C-121 Apr 21, 1942  
 Chairs; operating, dental, motorless E-AA-C-326 Apr 25, 1942  
 Cloths, Wiping; cotton, mixed and white, sterilized (for) machinery E-DDD-C-503 Apr 25, 1942  
 Cream and Soap; shaving E-FFF-C-641 Apr 29, 1942  
 Fasteners; paper, brass (superseding E-FF-F-101, 3/6/42) E-FF-F-101 Apr 30, 1942  
 Gaskets; asbestos-copper, corrugated E-HH-G-71; asbestos, metallic-cloth E-HH-G-76 Apr 21, 1942  
 Hose; chemical (superseding E-ZZ-H-421a, 4/3/42) E-ZZ-H-421a Apr 25, 1942  
 Matches; safety (full-size, in boxes) (superseding E-EE-M-101b, 4/3/42) E-EE-M-101b Apr 30, 1942  
 Metals: May 6, 1942  
   Bronze, Aluminum; bars, plates, rods, shapes, sheets and strips (superseding E-QQ-B-666, 9/12/41) E-QQ-B-666  
   Bronze, Aluminum; castings (superseding E-QQ-B-671a, 11/18/41) E-QQ-B-671a  
   Bronze, Phosphor; bars, plates, rods, shapes, sheets and strips (superseding E-QQ-B-746, 9/12/41) E-QQ-B-746  
   Copper; bars, plates, rods, shapes, sheets and strips E-QQ-C-501a  
   Copper-Silicon-Alloy; bars, plates, rods, shapes, sheets and strips (superseding E-QQ-C-591a, 11/28/41) E-QQ-C-591a  
   Copper-Silicon-Alloy; castings (superseding E-QQ-C-593, 11/28/41) E-QQ-C-593  
   Iron and Steel; sheet, tinned (tin-plate) (superseding E-QQ-I-706a, 8/16/41) E-QQ-I-706a  
   Nickel-Silver (German-Silver); bars, plates, rods, shapes, sheets, and strips (superseding E-QQ-N-321, 9/12/41) E-QQ-N-321  
   Terneplate (Long Ternes) (superseding E-QQ-T-191, 8/16/41) E-QQ-T-191  
   Terneplate (Roofing Tin) (superseding E-QQ-T-201, 9/12/41) E-QQ-T-201  
 Packing, Asbestos; metallic-cloth, sheet E-HH-P-31; rod, high-pressure E-HH-P-36; sheet, compressed E-HH-P-46; Apr 21, 1942  
 Packing; semimetallic E-HH-P-166 Apr 21, 1942  
 Paint, Pigments, etc.  
   Blue-Lead; basic-sulfate, dry and paste-in-oil E-TT-B-486 Apr 25, 1942  
   Enamel; heat-resisting (400 F), black E-TT-E-496 Apr 30, 1942

### Emergency Alternative Specifications (Continued)

Enamel; interior, gloss, light-tints and white E-TT-E-506a Apr 25, 1942  
 Enamel; pigmented (air-drying and baking) black E-TT-E-521 Apr 25, 1942  
 Paint; Blue-Lead-Base; basic-sulfate, linseed-oil ready-mixed E-TT-P-20 Apr 25, 1942  
 Paint; graphite, outside, ready-mixed, black (superseding E-TT-P-27, 2/24/42) E-TT-P-27 Apr 25, 1942  
 Paints; oil, interior, eggshell-flat-finish, ready-mixed and semipaste, light-tints and white E-TT-P-51a Apr 25, 1942  
 Paint; resin-emulsion, interior, paste, light tints and white E-TT-P-88 Apr 25, 1942  
 Paint; titanium zinc and titanium-zinc-lead, outside, ready-mixed, white (superseding E-TT-P-101a, 2/24/42) E-TT-P-101a Apr 25, 1942  
 Primer Paint; zinc dust-zinc oxide (for galvanized (zinc coated) or zinc surfaces) E-TT-P-641 Apr 25, 1942  
 Prussian Blue; dry, paste-in-japan, paste-in-oil E-TT-P-691 Apr 25, 1942  
 Red-Lead; dry and paste-in-oil E-TT-R-191a Apr 25, 1942  
 Shellac; orange E-TT-S-271 Apr 25, 1942  
 Ultramarine-Blue; dry, paste-in-japan, paste-in-oil E-TT-U-451 Apr 25, 1942  
 Varnish; damar E-TT-V-61 Apr 25, 1942  
 Varnish; shellac E-TT-V-91a Apr 25, 1942  
 White-Lead; basic-carbonate, dry, paste-in-oil and semipaste containing volatile thinner E-TT-W-251a Apr 25, 1942  
 Zinc-Oxide; dry and paste-in-oil E-TT-Z-301 Apr 25, 1942  
 Zinc-Oxide; leaded, dry and paste-in-oil E-TT-Z-321 Apr 25, 1942  
 Paper; toilet, tissue, roll (round and oval), and sheet E-UU-P-556b Apr 25, 1942  
 Plates, Pie; tinned E-RR-P-401 Apr 17, 1942  
 Plugs; spark E-W-P-506 Apr 17, 1942  
 Soaps and Cleaning Supplies:  
   Detergent, Hand; paste and powder (for) mechanics' use E-P-D-221 Apr 29, 1942  
   Detergents, Special; (for) aluminumware, dishwashing-machines, and manual cleaning) E-P-D-236 Apr 29, 1942  
   Powder; scouring (for) floors E-P-P-591 Apr 29, 1942  
   Powder; scouring (for) highly polished glass E-P-P-596a Apr 29, 1942  
   Soap: Apr 29, 1942  
     chip E-P-S-566a  
     grit, cake E-P-S-571a  
     grit, hand E-P-S-576  
     laundry, liquid E-P-S-586  
     laundry, ordinary, bar E-P-S-591a  
     laundry, powdered E-P-S-596a  
     liquid and paste: (for) automobile, floor, and general cleaning E-P-S-598  
     potash-linseed-oil; liquid and paste, (for) floor and general cleaning E-P-S-603  
     salt-water E-P-S-611a  
     toilet, floating, white E-P-S-616a  
     toilet, liquid E-P-S-618a  
     toilet, milled E-P-S-621a  
     toilet, powdered, (for) dispensers E-P-S-626a  
   Soap-Borax-Compound; toilet, (for) dispensers E-P-S-628 Apr 29, 1942  
   Soap-Powder E-P-S-606a Apr 29, 1942  
 Towels; paper E-UU-T-591 Apr 25, 1942

### U. S. Army and Navy

List of Material and Process Specifications for use in the maintenance and construction of aircraft (Lists Army Air Forces, Army-Navy Aeronautical, U.S. Army and Federal Specifications.) May be obtained for use in connection with Army Air Forces contracts and



for bidding purposes upon request to the Commanding General, AAF Materiel Center, Wright Field, Dayton, Ohio. (superseding issue of April 10, 1942) Bulletin No. 23, May 10, 1942.

Monthly Report on Changes in U.S. Army Specifications, Federal Specifications, Commercial Standards, Simplified Practice Recommendations compiled by the Standards Branch, Resources Division, Headquarters, Services of Supply, April 1942.

#### U. S. Department of Agriculture, Agricultural Marketing Administration (Washington, D. C.)

Beets with short-trimmed tops (U.S. Standards)  
Peaches, Dried (U.S. Standards for Grades)  
Peas, Fresh (U.S. Standards)

Rice: Brown, Milled and Rough (U.S. Standards)  
Tomatoes, Canned (U.S. Standards for Grades)

#### U. S. Department of the Interior, Bureau of Mines (Washington, D. C.)

New Process for Controlling Mercury Vapor Information Circular IC7206 Apr 1942

#### Interstate Commerce Commission, Division 3 (Washington, D. C.)

Regulations for Transportation of Explosives and Other Dangerous Articles (Includes shipping container specifications) Order No. 3666—Feb 1942 amendments

## Dr. David J. Price Is New NFPA President

**D**AVID J. PRICE, principal chemical engineer of the Bureau of Agricultural Chemistry and Engineering, U. S. Department of Agriculture, was elected president of the National Fire Protection Association at the NFPA annual meeting May 14. Dr. Price, who has also served as vice-president of the NFPA, is chairman of two NFPA technical committees and member of several others.

Dr. Price is well known in ASA work. He is chairman of the important committee on prevention of dust explosions, of which the National Fire Protection Association is sponsor, and is representative of the U. S. Department of Agriculture on the ASA Standards Council.

Dr. Price is a noted authority on the prevention of dust explosions. During the first World War he directed the emergency dust explosion and fire prevention campaign for the United States Grain Corporation in cooperation with Julius H. Barnes, president, and Herbert Hoover,

United States Food Administrator. In 1927 he was assigned by the Secretary of Agriculture, at the request of President Coolidge, to direct an investigation of causes of heating hay and barn fires in the flooded regions of Northern Vermont, where flood waters had reached the haymows. The investigation developed the need for scientific research on the problem of "spontaneous heating" of farm products. He was also appointed in 1937 to assist the Military Court in an investigation of the explosion at the Consolidated School, New London, Texas. He has developed methods for control and prevention of dust explosions and fires in grain-threshing machines, in cotton gins, as well as in places where grains, flours, and starches are stored.

Dr. Price is the senior author of a book on dust explosions and is author of numerous articles published in technical and scientific press and trade journals in the United States and foreign countries.

## ASA Approves Cast-Iron Standards

**T**HREE standards on cast-iron pipe and castings have just been given approval as American Standard by the American Standards Association, following their submittal to the ASA by the American Society for Testing Materials. These standards are:

Specifications for Gray-Iron Castings (ASA G25.1-1942; ASTM A48-41)

Specifications for Cast-Iron Culvert Pipe (ASA G26.1-1942; ASTM A142-38)

Specifications for Lightweight and Thin-Sectioned Gray-Iron Castings (ASA G27.1-1942; ASTM A190-40)

Approval of these standards by the ASA was requested by the ASTM on recommendation of ASTM Committee A-3 on Cast Iron, the Society's

representative committee which developed the standards and is responsible for continuing supervision of materials specifications relating to cast-iron. They were submitted to the ASA under the Existing Standards Method and the ASTM has been granted proprietary sponsorship to take care of future revisions.

The first of the standards, Specifications for Gray-Iron Castings (G25.1-1942; ASTM A 48-41) is the latest revision of an ASTM standard first issued in 1904. Since that time revisions have been made from time to time. The most important of these revisions was the change made in 1932 adopting the tensile strength basis rather than the chemical composition basis which had been used previously. These specifications

are used as the basis for practically all standards in the United States and Canada relating to gray-iron castings, including those of the Federal Government, the ASME boiler code, the American Association of State Highway Officials, the Hydraulic Institute, the Association of American Railroads, the Canadian Engineering Standards Association, and many others.

The Specifications for Cast-Iron Culvert Pipe, which were first issued in 1932, are largely used by state highway departments and by railroads to govern purchases of culvert pipe.

The Specifications for Light-Weight and Thin-Section Gray Iron Castings constitute a companion document to the Specifications for Gray-Iron Castings. Since the specifications for gray-iron castings (G25.1-1942) are based on tensile strength requirements, the specifications for light-weight and thin-section gray-iron castings were developed in response to a demand for lighter castings for which machinability, appearance, and dimensional tolerances were of higher importance than is tensile strength.

## Dr. C. H. Sharp

THE American Standards Association and the United States National Committee of the International Electrotechnical Commission, lost one of their outstanding men with the death of Dr. Clayton H. Sharp, May 13. Dr. Sharp had taken a principal part in both national and international standardization in the electrical field as president of the United States National Committee of the IEC from 1924 to 1940 and as honorary president since that time. He had been the United States delegate to many international conferences of the IEC, beginning in 1911 with the meeting at Turin and ending with the final IEC conference at Torquay in 1938. He first became a member of the USNC in 1907, and served as its secretary from 1921 until his election as president in 1924.

Dr. Sharp's international reputation was based not only on his work with the IEC but also on his membership in the International Commission on Illumination. He was president of the United States National Committee of the ICI from 1914 to 1928 and was United States representative at many of the ICI international conferences as well as at the meetings of the IEC.

Dr. Sharp, who received his A.B. from Hamilton College in 1890 and his Ph.D. from Cornell University in 1895, was vice-president of the Electrical Testing Laboratories, New York, from 1914 to 1933. He was author of many technical

monographs and held patents for various instruments for electrical and photometric measurements.

He was a member of the American Physical Society, the American Association for the Advancement of Science, the American Institute of Electrical Engineers, the Optical Society of America, the Societe Francaise des Electriciens, and past-president of the Illuminating Engineering Society.

Through his long affiliation with the work of the International Electrotechnical Commission and other bodies, Dr. Sharp exercised a strong influence on international standardization. His ability, his genial personality, and his capacity for hard work made him an outstanding figure in the field of international standards and won him numerous friends throughout the world. His influence at the council tables of the U.S. National Committee and other standardizing bodies in this country was strong. All of us who were associated with him in this work held him high, both in regard and in affection, and feel through his death a deep sense of personal loss.

—H. S. Osborne

*Vice-President, United States National Committee, International Electrotechnical Commission.*

# ASA Standards Activities

## Standards Available Since Our May Issue

- Electrical Terms, Definitions of American Standard C42-1941 \$1.00
- Elevators, Dumbwaiters and Escalators, Safety Code (Supplement to A17.1-1937) American Standard A17.3-1942 25¢
- Lap-Welded and Seamless Steel Pipe for High-Temperature Service (ASTM A106-41) (Revision of B36.3-1940) American Standard B36.3-1942 25¢
- Materials for: Boilers, Pressure Vessels, etc.; Flanges and Boltings; Locomotives

## Materials for: Boilers, etc.—(Cont'd)

- Carbon-Silicon Steel Plates of Ordinary Tensile Ranges for Fusion-Welded Boilers and Other Pressure Vessels (ASTM A201-39) American Standard G31.1-1942 25¢
- Chrome-Manganese-Silicon (CMS) Alloy-Steel Plates for Boilers and Other Pressure Vessels (ASTM A202-39) American Standard G32.1-1942 25¢
- High-Tensile Strength Carbon-Silicon Steel Plates for Boilers and Other Pressure Vessels (Plates  $4\frac{1}{2}$  In. and Under in Thickness) (ASTM A212-39) American Standard G35.1-1942 25¢

#### Materials for: Boilers, etc.—(Cont'd)

- Low-Carbon Nickel-Steel Plates for Boilers and Other Pressure Vessels (ASTM A204-39) American Standard G33.1-1942 25¢
- Low Tensile Strength Carbon-Steel Plates of Flange and Firebox Qualities (ASTM A89-39) American Standard G30.1-1942 25¢
- Molybdenum-Steel Plates for Boilers and Other Pressure Vessels (ASTM A204-39) American Standard G34.1-1942 25¢
- Alloy-Steel Castings for Valves, Flanges, and Fittings for Service at Temperatures from 750 to 1100 F (ASTM A157-41) American Standard G36.1-1942 25¢
- Carbon and Alloy-Steel Nuts for Bolts for High-Pressure and High-Temperature Service to 1100 F (ASTM A194-40) American Standard G38.1-1942 25¢
- Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves for Parts for Service at Temperatures from 750 to 1100 F (ASTM A182-40) American Standard G37.1-1942 25¢
- Structural Steel for Locomotives and Cars (ASTM A113-39) American Standard G39.1-1942 25¢

#### Standards Approved Since Our May Issue

- Lap-Welded and Seamless Steel Pipe for High-Temperature Service (ASTM A106-41) (Revision of B36.3-1940) American Standard B36.3-1942
  - Materials for: Boilers, Pressure Vessels, etc.: Flanges and Boltings; Locomotives
    - Boiler Rivet Steel and Rivets (ASTM A31-40) American Standard G28.1-1942
    - Carbon-Steel Plates for Stationary Boilers and Other Pressure Vessels (ASTM A70-39) American Standard G29.1-1942
- (See also "Standards Available" above)

#### Standards Being Considered by ASA for Approval

- Adjustable Face Traffic Control Signal Head Standards D10
- Building Exits Code (Revision of A9-1940)
- Cast-Iron Pipe Flanges and Flanged Fittings, Class 250 (Revision of B16b-1928)
- Cold-Rolled Strip Steel (ASTM A109-38) G47
- Forged or Rolled Steel Pipe Flanges for General Service (ASTM A181-37) G46.1
- Gas Floor Furnaces (CS99-42)
- Identification Markings of Compressed Gas Cylinders, Proposed Standardization
- Keyways for Holes in Gears B6.4

#### Lime

- Limestone, Quicklime, and Hydrated Lime, Methods of Chemical Analysis of (ASTM C25-29)
- Quicklime for Structural Purposes, Specifications for (ASTM C5-26)

#### Pipe Threads (Revision of B2-1919)

- Protection of Structures Containing Inflammable Liquids and Gases—Part 3 of Code for Protection Against Lightning (From status as American Tentative Standard to American Standard) C5, Part 3

#### Public Approval and Certification Procedures Z34

- Refrigerators Using Gas Fuel, Approval Requirements for (Revision of Z21.19-1936)

#### Rotating Electrical Machinery on Railway Locomotives and Rail Cars and Trolley, Gasoline-Electric and Oil-Electric Coaches (Revision of C35-1936) C35

#### Textile Testing Machines (ASTM D76-41) L15

#### Wool Felt, Methods of Testing (ASTM D461-40) L16

#### Wrought-Iron and Wrought-Steel Pipe and Tubing

- Electric-Resistance-Welded Steel Boiler and Superheater Tubes for High-Pressure Service (ASTM A226-40) B36.18

#### Electric-Resistance-Welded Steel and Open Hearth Iron Boiler Tubes (ASTM A178-40) B36.13

#### Lap-Welded and Seamless Steel and Lap-Welded Boiler Tubes (ASTM A83-40) B36.12

#### Wrought-Iron and Wrought-Steel Pipe—(Cont'd)

- Seamless Alloy-Steel Boiler and Superheater Tubes (ASTM A213-40) B36.17
- Seamless Steel Boiler Tubes for High-Pressure Service (ASTM A192-40) B36.14
- Spiral-Welded Steel or Iron Pipe (ASTM A211-40) B36.16
- Medium-Carbon Seamless Steel Boiler and Superheater Tubes (ASTM A210-40) B36.15

#### Standards Submitted for Consideration Since Our May Issue

- Coal Mines, Rock Dusting to Prevent Coal Dust Explosions (Reaffirmation of M13-1925)
- Colored Textiles, Fastness L14
- Cranes, Derricks, and Hoists, Safety Code B30
- Gas-Burning Equipment in Power Boilers, Requirements for Installation Z21.33
- Gas Valves, Listing Requirements (Revision of Z21.15-1934)
- Gypsum Plastering, Specifications for, including Requirements for Lath and Furring (Revision of A42.1-1938)

#### Iron

- Malleable Iron Castings (ASTM A47-33) G48
- Cupola Malleable Iron (ASTM A197-39) G49
- Photography
  - Distance Scales Marked in Feet Z38.4.3
  - Double Plate Holders (Moulding Type) Z38.1.Q
  - Focal Lengths of Lenses: Marking Z38.4.4
  - Photographic Paper Roll Leaders and Limit Signals Z38.1.M
  - Shutter Cable Release Tips and Sockets with Straight Threads Z38.4.6
  - Shutter Cable Release Tips and Sockets with Tapered Threads Z38.4.5
  - Tripod Connections for American Cameras Z38.4.1
  - Tripod Connections for European Cameras with Adapter for American Tripods Z38.4.2
- Power-Operated Radio Receiving Appliances (UL 6th ed) (Revision of C65-1938)

#### Withdrawal of Approval Being Considered

- Colors for Traffic Signals, Safety Code D3-1927

#### New Project Being Considered

- Performance of commercial dishwashing machines, and practice for dishwashing operation

### American War Standards

#### Standards Approved and Published

- Accuracy of Engine Lathes B5.16-1941
- Allowable Concentration of Cadmium Z37.5-1941
- Guide for Quality Control Z1.1-1941
- Control Chart Method of Analyzing Data Z1.2-1941

#### Standards Available Since Our May Issue

- Domestic Gas Ranges, Approval Requirements Z21.1ES-1942 \$1.00

#### Standards Approved Since Our May Issue

- Gas Water Heaters, Approval Requirements Z21.10WS-1942
- Machine Tool Electrical Standards C74-1942

#### Standards Under Way

- Allowable Concentration of Ether Z37
- Allowable Concentration of Manganese Z37
- Allowable Concentration of Xylene Z37
- Allowable Concentration of Xylol Z37
- Color, Specification and Description Z44
- Color Fastness of Textiles, Terminology L14
- Military Radio Equipment and Parts C75
- Packaging of Electronic Tubes Z45
- Protective Lighting of Industrial Plants A85

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